

# SUBIECTE ADMITERE 2011

## TEST GRILĂ – LIMBA ENGLEZĂ VARIANTA I

### Partea I: CITIT

A. Ion Luca Caragiale (February 13, 1852 – July 9, 1912) was a Wallachian-born Romanian playwright, short story writer, poet, theater manager, political commentator and journalist. Leaving behind an important cultural legacy, he is considered one of the greatest playwrights in Romanian language and literature, as well as one of its most important writers and a leading representative of local humor. Alongside Mihai Eminescu, Ioan Slavici and Ion Creangă, he is seen as one of the main representatives of *Junimea*, an influential literary society with which he nonetheless parted during the second half of his life. His work, for four decades, covers the ground between Neoclassicism, Realism, and Naturalism, building on an original synthesis of foreign and local influences.

Although few in number, Caragiale's plays constitute the most accomplished expression of Romanian theater, as well as being important venues for criticism of late 19th-century Romanian society. They include the comedies *O noapte furtunoasă*, *Conu Leonida față cu reacțiunea*, *O scrisoare pierdută*, and the tragedy *Năpasta*.

1. The main idea of the text is about:
  - a. a literary society
  - b. a tragedy
  - c. a Romanian playwright
  - d. Mihai Eminescu
2. When was I. L. Caragiale born?
  - a. 1852
  - b. 1912
  - c. wallachian
  - d. realism
3. What was Junimea?
  - a. a comedy
  - b. a literary society
  - c. a poem
  - d. a theater manager
4. How long did Caragiale's work last?
  - a. 20 years
  - b. 10 years
  - c. 5 years
  - d. 40 years
5. Which of the following is a tragedy?
  - a. Năpasta
  - b. O noapte furtunoasă

- c. O scrisoare pierdută
- d. Conu Leonida față cu reacțiunea

**B.** The wedding of Prince William, Duke of Cambridge, and Catherine Middleton took place on 29 April 2011 at Westminster Abbey in London. Prince William, second in the line of succession to Queen Elizabeth II, first met Catherine Middleton in 2001, when both were studying at the University of St Andrews. Their engagement on 20 October 2010 was announced on 16 November 2010.

Middleton wore a white dress by British designer Sarah Burton, as well as a tiara lent to her by the Queen. Prince William wore the uniform of his honorary rank of Colonel of the Irish Guards. William's best man was his brother, Prince Harry, while the bride's sister, Pippa, acted as her maid of honour. The wedding ceremony began at 11:00 a.m.. John Robert Hall, the Dean of Westminster, conducted the service, with Rowan Williams, the Archbishop of Canterbury, conducting the marriage ceremony itself and Richard Chartres, the Bishop of London, giving the sermon. A reading was given by the bride's brother, James.

- 6. What was the main event in London on 29 April 2011?
  - a. a terrorist attack
  - b. a baseball game
  - c. a solar eclipse
  - d. the wedding of Prince William
  
- 7. Where did the wedding ceremony take place?
  - a. 29 April 2011
  - b. St. Andrews
  - c. Irish Guards
  - d. Westminster Abbey
  
- 8. Who designed the bride's dress?
  - a. Rowan Williams
  - b. Sarah Burton
  - c. Queen Elisabeth
  - d. Prince Harry
  
- 9. When did William and Catherine first meet?
  - a. in 2001
  - b. 20 October 2010
  - c. 29 April 2011
  - d. University of St. Andrews
  
- 10. Who was Catherine's made of honour?
  - a. Prince William
  - b. the Bishop of London
  - c. Pippa Middleton
  - d. the Dean of Westminster

C. Formula One, also known as Formula 1 or F1, is the highest class of single seater auto racing sanctioned by the Fédération Internationale de l'Automobile (FIA). The F1 season consists of a series of races, known as Grands Prix (literally translated into English as "Big Prizes"), held on purpose-built circuits and public roads. The results of each race are combined to determine two annual World Championships, one for the drivers and one for the constructors.

Formula One cars are considered to be the fastest circuit-racing cars in the world, owing to very high cornering speeds achieved through the generation of large amounts of aerodynamic downforce. Formula One cars race at speeds of up to 360 km/h with engines limited in performance to a maximum of 18,000 revolutions per minute (RPM). The cars are capable of lateral acceleration in excess of 5 g in corners.

11. According to the text, what is considered to be the fastest racing sport in the world?
  - a. NASCAR
  - b. Formula One
  - c. soccer
  - d. swimming
  
12. What does FIA stands for?
  - a. Football Society
  - b. World Championships
  - c. Fédération Internationale de l'Automobile
  - d. Fastest in action
  
13. What is the top speed for F1 cars?
  - a. 220 km/h
  - b. 180 km/h
  - c. 360 km/h
  - d. 5 km/h
  
14. The name of a F1 race is:
  - a. downforce
  - b. Grand Prix
  - c. cornering speeds
  - d. acceleration

15. The F1 cars engines are limited at:
- 18,000 RPM
  - 5 g
  - corners
  - 360 km/h

**Partea a II-a: Elemente de GRAMATICĂ ȘI VOCABULAR**

16. Europe is a large \_\_\_\_\_.
- state
  - town
  - continent
  - district
17. They \_\_\_\_\_ shopping last weekend.
- go
  - went
  - to go
  - gone
18. How many phone \_\_\_\_\_ did you make?
- calling
  - called
  - call
  - calls
19. John always \_\_\_\_\_ breakfast in the morning.
- have
  - has
  - to have
  - having
20. My brother is \_\_\_\_\_ than me.
- taller
  - tall
  - tallest
  - the tallest
21. I must \_\_\_\_\_ her tomorrow.
- to see
  - saw
  - will see
  - see
22. Mary \_\_\_\_\_ her grandparents yesterday.
- visit
  - to visit
  - visited
  - visiting

23. Helen is \_\_\_\_\_ in her class.
- younger
  - young
  - the youngest
  - youngest
24. We \_\_\_\_\_ to the seaside next week.
- will go
  - went
  - go
  - to go
25. I went to the airport \_\_\_\_\_ car.
- on
  - in
  - at
  - by
26. It is a quarter to eight. What time is it?
- 7.45
  - 8.45
  - 8.15
  - 8.30
27. The cadets will soon get accustomed to the military life.
- They will never like it.
  - They will get used to it.
  - They will never get used to it.
  - They may get accustomed to the military life.
28. My family has dinner in the \_\_\_\_\_.
- morning
  - evening
  - afternoon
  - noon
29. Tennis is a \_\_\_\_\_.
- fruit
  - flower
  - colour
  - sport
30. Jim was a salesman for a decade. How long did he work ?
- five years
  - twelve years
  - ten years
  - twenty years

31. The students must take a long examination tomorrow.
- They don't have to take the test.
  - They can take it if they want to.
  - They have to take the test.
  - They might take it tomorrow.
32. It is 7 a.m.. I'm in my kitchen having a coffee. It is a nice \_\_\_\_\_ .
- evening
  - afternoon
  - noon
  - morning
33. My brother will go to the university to take up engineering.
- He will study to be an engineer.
  - He will teach engineering there.
  - He will work as an engineer there.
  - He will pick up his friend, an engineer.
34. Red is a \_\_\_\_\_ .
- football
  - colour
  - tennis
  - music
35. She spends a great deal of time reading. Does she read much?
- She reads very little.
  - She reads once and in a while.
  - She reads a lot.
  - She doesn't read after all.

### **Partea a III-a: SCRIS**

36. In order to write to your sister you have to:
- use an informal language
  - use a formal language
  - use a flower
  - use an apple
37. Which is the correct order?
- Is Susan my name.
  - My name is Susan.
  - Is my Susan name.
  - Susan my is name.
38. An informal letter is made of:
- a body and an ending
  - an introduction, a body and an ending
  - only a body
  - an introduction

39. Which is the correct order?
- Music to I like listening.
  - Listening to music like I.
  - I like music listening to.
  - I like listening to music.
40. A complaint begins with:
- Dear Bill,
  - Good bye,
  - Dear Sir/Madam,
  - Best wishes,
41. Choose the most appropriate line to finish a formal letter:
- Dear Sir,
  - Dear George,
  - Respectfully yours,
  - Good bye,
42. How do you begin an informal letter?
- Dear Madam,
  - Faithfully yours,
  - Best wishes,
  - Dear Mary,
43. Choose the correct order:
- Didn't like his job he that he told me.
  - He told me that he didn't like his job.
  - That he told me didn't like his job he.
  - He told me his job didn't like he that.
44. Choose the most appropriate line to finish an informal letter:
- Dear Sir,
  - Dear Madam,
  - Respectfully yours,
  - Love, Adrian,
45. Which is the correct order?
- It takes a long time to learn a language.
  - It a long time takes a language to learn.
  - To learn a language a long time takes it.
  - It takes a long time a language learn to.

GRILA DE CORECTARE  
LIMBA ENGLEZĂ  
VARIANTA I

1	c	11	b	21	d	31	c	41	c
2	a	12	c	22	c	32	d	42	d
3	b	13	c	23	c	33	a	43	b
4	d	14	b	24	a	34	b	44	d
5	a	15	a	25	d	35	c	45	a
6	d	16	c	26	a	36	a		
7	d	17	b	27	b	37	b		
8	b	18	d	28	b	38	b		
9	a	19	b	29	d	39	d		
10	c	20	a	30	c	40	c		

**Punctaj acordat:** câte 0,2 puncte pentru fiecare răspuns corect (0,2 puncte x 45 întrebări = 9 puncte).

**Nota** se calculează adăugând un punct din oficiu la punctajul obținut.

## VARIANTA II

### Partea I: CITIT

A. Many homes have a kitchen room or outside kitchen area devoted to preparation of meals and food, and may have a dining room, dining hall, or another designated area for eating. Some trains have a dining car. Most societies also have restaurants and/or food vendors, so that people may eat when away from home, when lacking time to prepare food, or as a social occasion. At picnics and food festivals, eating is in fact the primary purpose of a social gathering.

People usually have two or three meals a day regularly. Snacks of smaller amounts may be consumed between meals. Having three well-balanced meals will then account to some 1800–2000 kcal; which is the average requirement for a regular person. Leading nutritionists believe that instead of indulging oneself in three large meals each day, it is much healthier and easier on the metabolism to eat five smaller meals each day (e.g. better digestion, easier on the lower intestine to deposit wastes; whereas larger meals are tougher on the digestive tract).

1. The main idea of the text is about:
  - a. eating practices among humans
  - b. the best restaurants in the world
  - c. Chinese cuisine
  - d. traditional food
  
2. A dining room is a:
  - a. meal
  - b. snack
  - c. designated area for eating
  - d. nutritionist



3. Where can you eat food in a train?
  - a. sleeping car
  - b. locomotive
  - c. toilet
  - d. dining car
4. According to the text, how many meals do people usually eat every day?
  - a. six
  - b. two or three
  - c. ten
  - d. twenty
5. Eating five smaller meals each day is:
  - a. tougher on digestive tract
  - b. easier on the metabolism
  - c. a social gathering
  - d. a picnic

**B.** Transformers is a 2007 American science fiction action film based on the Transformers toy line. The film, which combines computer animation with live-action, is directed by Michael Bay, with Steven Spielberg serving as executive producer. It stars Shia LaBeouf as Sam Witwicky, a teenager involved in a war between the heroic Autobots and the evil Decepticons, two factions of alien robots who can disguise themselves by transforming into everyday machinery. The Decepticons desire control of the AllSpark, the object that created their robotic race, with the intention of using it to build an army by giving life to the machines of Earth.

The United States Armed Forces and General Motors (GM) loaned vehicles and aircraft during filming, which saved money for the production and added realism to the battle scenes.

6. The text is about:
  - a. the American history
  - b. a novel
  - c. a vampire movie
  - d. a science fiction action film
7. Who is the director of Transformers movie?
  - a. Michael Bay
  - b. Steven Spielberg
  - c. Sam Witwicky
  - d. Shia LaBeouf
8. The evil side is represented in the movie by:
  - a. General Motors
  - b. U. S. Army
  - c. Decepticons
  - d. Earth

9. According to the text, in the movie, Autobots and Decepticons are:
- teenagers
  - alien robots
  - famous restaurants
  - actresses

10. In the movie, live action is combined with:
- sword fighting
  - opera
  - computer animation
  - nothing

C. Stephen III of Moldavia, also known as Stephen the Great, was Prince of Moldavia between 1457 and 1504 and the most prominent representative of the House of Musat.

During his reign, he strengthened Moldavia and maintained its independence against the ambitions of Hungary, Poland, and the Ottoman Empire. Stephen achieved fame in Europe for his long resistance against the Ottomans. He was victorious in 46 of his 48 battles, and was one of the first to gain a decisive victory over the Ottomans at the Battle of Vaslui, after which Pope Sixtus IV deemed him *verus christianae fidei athleta* (*true Champion of Christian Faith*).

His father Bogdan II had ruled Moldavia for two years (1449 to 1451) before being killed in a stealthy raid led by Stephen's uncle, Petru Aron. Stephen barely escaped with his life, but his father was captured and beheaded on the spot by his stepbrother Petru Aron.

11. The text is about:
- Stephen the Great
  - Michael the Brave
  - Vlad the Impaler
  - Ferdinand III

12. Bogdan II was killed by:
- plague
  - Pope Sixtus IV
  - cancer
  - Petru Aron

13. Stephen the Great was the ruler of:
- Hungary
  - Poland
  - Moldavia
  - Ottoman Empire

14. Stephen won:
- 48 battles
  - 46 battles
  - 29 battles
  - 3 battles

15. Stephen was the son of:

- a. Pope Sixtus IV
- b. Vaslui
- c. Ottomans
- d. Bogdan II

**Partea a II-a: elemente de GRAMATICĂ ȘI VOCABULAR**

16. What does the man want \_\_\_\_\_?

- a. buy
- b. to buy
- c. bought
- d. did buy

17. Bucharest is a \_\_\_\_\_ .

- e. continent
- f. state
- g. city
- h. ocean

18. Sue used to \_\_\_\_\_ here often.

- e. come
- f. comes
- g. came
- h. coming

19. This house is \_\_\_\_\_ than the other one.

- e. largest
- f. larger
- g. large
- h. the most large

20. Mr. Smith \_\_\_\_\_ the bus to town tomorrow.

- e. will take
- f. take
- g. to take
- h. took

21. My brother John \_\_\_\_\_ his bike every day.

- e. ride
- f. riding
- g. to ride
- h. rides

22. He didn't \_\_\_\_\_ what to say.
- e. knew
  - f. to know
  - g. know
  - h. knows
23. It is \_\_\_\_\_ to study more.
- e. more better
  - f. more good
  - g. gooder
  - h. better
24. He can \_\_\_\_\_ better than his brother.
- e. drives
  - f. to drive
  - g. driving
  - h. drive
25. Joan \_\_\_\_\_ too much last night.
- e. ate
  - f. eat
  - g. eaten
  - h. eats
26. Tom has not drunk any water for seven hours. He is \_\_\_\_\_.
- e. thirsty
  - f. hungry
  - g. tired
  - h. happy
27. The fifth month of the year is \_\_\_\_\_?
- e. May
  - f. July
  - g. April
  - h. January
28. Mary said the test was hard. What did she say about the test?
- e. It was easy.
  - f. It was difficult.
  - g. It was long.
  - h. It was too easy.
29. Which of the following is a planet?
- e. helicopter
  - f. picture
  - g. Earth
  - h. computer

30. Children are able to learn this poem very quickly.
- e. They can learn the poem fast.
  - f. They don't like the poem.
  - g. They won't learn the poem.
  - h. They must learn the poem now.
31. "My name is John Forrest".  
"Nice to \_\_\_\_\_ you, Mr. Forrest".
- e. meet
  - f. talk
  - g. watch
  - h. eat
32. The exam started at a quarter past nine. What time did the exam start?
- e. 8.45
  - f. 9.15
  - g. 9.30
  - h. 9.00
33. Bananas are tasty \_\_\_\_\_.
- e. vegetables
  - f. flowers
  - g. computers
  - h. fruits
34. Which of the following is a vegetable?
- a. apple
  - b. tomato
  - c. milk
  - d. pig
35. A century is equal with \_\_\_\_\_.
- a. one hundred years
  - b. fifty years
  - c. one thousand years
  - d. ten years

**Partea a III-a: SCRIS**

36. After ending a formal letter you must:
- a. check if the text has no grammar mistakes
  - b. check if the text has no spelling mistakes
  - c. check if the text has no grammar or spelling mistakes
  - d. do nothing
37. In order to apply for a job you have to:
- a. use a formal language
  - b. use an informal language
  - c. use a flower
  - d. use a mirror

38. Choose the correct order:
- Me to learn to drive how long will it take?
  - How long will it take me to learn to drive?
  - How long will it take drive to learn to me?
  - Drive to learn to me how long will take it?
39. How do you start an informal letter?
- Dear Madam,
  - Dear Sir,
  - Dear Robert,
  - Dear Sirs,
40. How do you end a formal letter?
- Good bye,
  - Sincerely yours,
  - Dear Sir,
  - Dear Mary-Anne,
41. Which is the correct order?
- Going to the dentist hate I.
  - Hate going the I to dentist.
  - I going hate to the dentist.
  - I hate going to the dentist.
42. In order to write a complaint you have to:
- use an informal language
  - use a map
  - use a formal language
  - use a spoon
43. A formal letter is composed of:
- a body and an ending
  - only a body
  - an introduction, a body and an ending
  - only an introduction
44. Choose the correct order:
- The football match my team win will.
  - My team will win the football match.
  - My the team football match win will.
  - The my match football will team win.
45. Choose the most appropriate line to start a formal letter:
- Dear Sally/Steven,
  - Hi my friend,
  - Best regards,
  - Dear Sir/ Madam,

**GRILA DE CORECTARE  
LIMBA ENGLEZĂ  
VARIANTA II**

1	a	11	a	21	d	31	a	41	d
2	c	12	d	22	c	32	b	42	c
3	d	13	c	23	d	33	d	43	c
4	b	14	b	24	d	34	b	44	b
5	b	15	d	25	a	35	a	45	d
6	d	16	b	26	a	36	c		
7	a	17	c	27	a	37	a		
8	c	18	a	28	b	38	b		
9	b	19	b	29	c	39	c		
10	c	20	a	30	a	40	b		

**Punctaj acordat:**

câte 0,2 puncte pentru fiecare răspuns corect (0,2 puncte x 45 întrebări = 9 puncte).

**Nota** se calculează adăugând un punct din oficiu la punctajul obținut.

**TEST DE VERIFICARE A CUNOȘTIȚELOR LA MATEMATICĂ-  
FIZICĂ**

**VARIANTA 1**

1. Soluția inecuației  $2x^2 - 3x - 2 > 0$  aparține domeniului:

- a)  $x \in (-1, +\infty)$       b)  $x \in (-\infty; -\frac{1}{2})$   
c)  $x \in (2; +\infty)$       d)  $x \in (-\infty; -\frac{1}{2}) \cup (2; +\infty)$

2. Soluția ecuației  $2^x = 8^{20}$ ,  $x \in R$  este:

- a) 50      b) 60      c) 20      d) 30

3. Se consideră ecuația irațională  $\sqrt{\frac{x}{x+1}} + \sqrt{\frac{x+1}{x}} = a$ . Pentru  $a = 0,05$ , suma rădădinilor ecuației este:

- a) 0      b) -1      c) 2      d) 1

4. Primii cinci termeni ai progresiei aritmetice cu  $a_1 = \frac{3}{2}; r = \frac{1}{3}$  sunt:

- a)  $\frac{3}{2}, \frac{11}{6}, \frac{14}{6}, \frac{5}{2}, \frac{17}{6};$     b)  $\frac{3}{2}, \frac{10}{6}, \frac{13}{6}, \frac{5}{2}, \frac{17}{6};$     c)  $\frac{3}{2}, \frac{11}{6}, \frac{13}{6}, \frac{5}{2}, \frac{17}{6};$     d)  $\frac{3}{2}, \frac{11}{6}, \frac{13}{6}, \frac{5}{2}, \frac{16}{6};$

5. Să se calculeze valoarea expresiei:  $E = \sin(x + y)$ , știind că:

$$x \in (0, \frac{\pi}{2}), \sin x = \frac{4}{5}, y \in (\frac{3\pi}{2}, 2\pi) \text{ și } \cos y = \frac{7}{25}.$$

- a)  $E = -\frac{43}{125};$     b)  $E = \frac{44}{125};$     c)  $E = \frac{43}{125};$     d)  $E = -\frac{44}{125}$

6. Suma coeficienților polinomului este  $f(x) = 2X^3 - 3X + 17$  este:

- a) 16    b) 14    c) 12    d) -8

7. Primii cinci termeni ai șirului cu termenul general dat de relația  $a_n = (-1)^n \cdot 2^{-n}$  sunt:

- a)  $\frac{1}{2}; \frac{1}{4}; \frac{1}{8}; \frac{1}{16}; \frac{1}{32};$     b)  $-\frac{1}{2}; -\frac{1}{4}; -\frac{1}{8}; -\frac{1}{16}; -\frac{1}{32};$

- c)  $-\frac{1}{2}; \frac{1}{4}; -\frac{1}{8}; \frac{1}{16}; -\frac{1}{32};$     d)  $\frac{1}{2}; -\frac{1}{4}; \frac{1}{8}; -\frac{1}{16}; \frac{1}{32};$

8. Dacă  $A = \begin{pmatrix} 1 & 2 \\ 0 & 2 \end{pmatrix}$ , atunci  $A^3$  este :

- a)  $\begin{pmatrix} 0 & 14 \\ 2 & 8 \end{pmatrix};$     b)  $\begin{pmatrix} 1 & 14 \\ 0 & 8 \end{pmatrix};$     c)  $\begin{pmatrix} -1 & 14 \\ 14 & 2 \end{pmatrix};$     d)  $\begin{pmatrix} -1 & 2 \\ 7 & 1 \end{pmatrix}.$

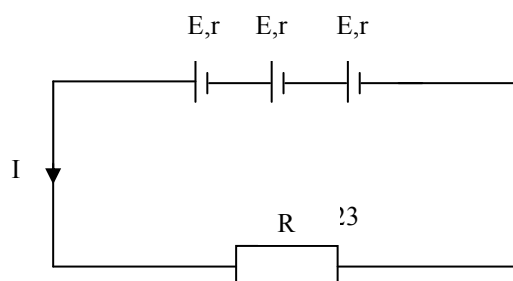
9. Conjugatul numărului complex  $(-3+2i)(-4-i)$  este :

- a)  $16+5i$     b)  $14+5i$     c)  $16-5i$     d)  $15+3i$

10. Alegeți unitatea de măsură ce corespunde mărimii fizice conductanță electrică.

- a)  $V \cdot A \cdot m;$     b)  $\Omega \cdot m;$     c)  $\frac{V \cdot m}{A};$     d)  $\Omega^{-1}$

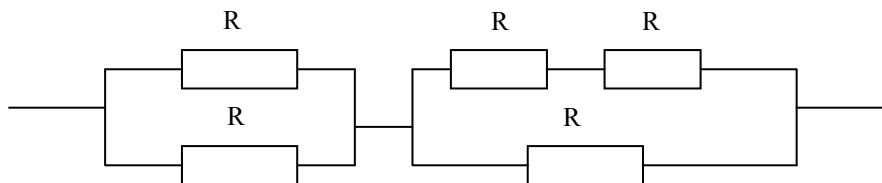
11. Expresia tensiunii electrice la bornele unei baterii formate din trei surse identice de tensiune electromotoare  $E$  și rezistența interioară  $r$ , conectate în serie la un rezistor  $R$  este:





- a)  $U = E - 3Ir$ ;      b)  $U = 3E - Ir$ ;      c)  $U = 3E - 3Ir$ ;      d)  $U = E - Ir$

12. În circuitul din figura alăturată toți rezistorii au aceeași rezistență.  $R = 6\Omega$ . Rezistența echivalentă a circuitului este:

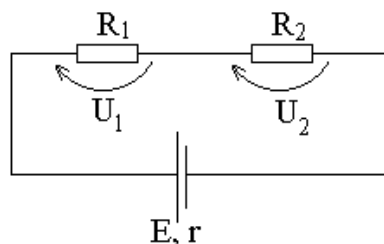


- a)  $R = 7\Omega$       b)  $R = 6\Omega$       c)  $R = 5\Omega$       d)  $R = 4\Omega$

13. Se dă următorul circuit electric care cuprinde rezistoarele  $R_1 = 2\Omega$  și  $R_2 = 0,5\Omega$  alimentate de la o sursă de tensiune  $E = 9V$ ,  $r = 0,5\Omega$ . Căderea de tensiune pe  $R_1$  este  $U_1 = 6V$ .

Intensitatea curentului prin circuit este:

- a) 4 A;  
b) 3 A;  
c) 6 A;  
d) 5 A.



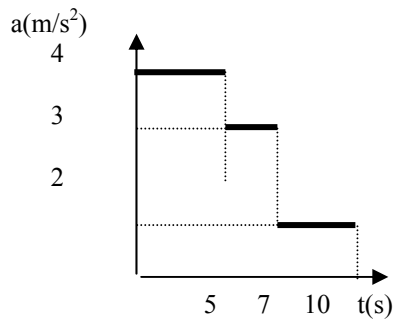
14. Un bec de putere  $P=30W$ , la borne cărui, în timpul funcționării, tensiunea este  $U=60V$ , are rezistența la  $0^{\circ}C$ ,  $R_0=37,5\Omega$ . Considerând cunoscut coeficientul de variație termică a rezistivității filamentului  $\alpha=10^{-3}grad^{-1}$ , temperatura, în grade Kelvin, a filamentului este:

- a) 2373K      b) 2473K      c) 2173K      d) 2273K

15. Unitatea de măsură în S.I. pentru forță este:

- a) N;      b) J;      c) W;      d)  $kg \cdot m/s$ .

16. În figura alăturată este reprezentată dependența de timp a accelerației unui corp care se deplasează rectiliniu. Dacă inițial corpul se afla în repaus, viteza la momentul  $t=10\text{s}$  este:



- a)  $34\text{m/s}$       b)  $32\text{m/s}$       c)  $28\text{m/s}$       d)  $26\text{m/s}$

17. Un corp de masă  $m$  coboară uniform pe un plan înclinat de un unghi  $\alpha$ . Dacă coeficientul de frecare dintre corp și plan este  $\mu = \text{tg } \alpha$ , accelerația corpului pe plan este:

- a)  $g \cos \alpha$       b)  $g \sin \alpha$       c)  $0$       d)  $g \sin \alpha - \mu g \cos \alpha$

18. Energia potențială elastică înmagazinată într-un resort de constantă elastică  $K = 200\text{N/m}$ , de care e atârnat un corp de masă  $m = 5\text{kg}$  este:

- a)  $6,25\text{J}$       b)  $6\text{J}$       c)  $5,25\text{J}$       d)  $33\text{J}$

Se va considera  $g = 10 \text{ m/s}^2$ .

**GRILA DE REZOLVARE A SUBIECTELOR LA  
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FIZICĂ**

**VARIANTA 1**

1.	d
2.	b
3.	b
4.	c
5.	d
6.	a
7.	c
8.	b
9.	b

10.	d
11.	c
12.	a
13.	b
14.	b
15.	a
16.	b
17.	c
18.	a

NOTĂ: Se acordă un punct din oficiu, iar pentru fiecare item corect rezolvat câte 0,5 puncte.

**TEST DE VERIFICARE A CUNOȘTINȚELOR LA MATEMATICĂ-  
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**VARIANTA 2**

1. Soluția inecuației  $\frac{x^2 + 7x + 10}{x(x-1)} \geq 0$

a)  $x \leq 2$

b)  $x \in (-\infty, -5] \cup (1, +\infty)$

c)  $x \leq -1$

d)  $x \in (-\infty, -5] \cup [-2, 0) \cup (1, +\infty)$

2. Soluția ecuației  $64^x - 32 = 0, x \in R$  este:

- a)  $\frac{1}{6}$       b)  $\frac{5}{6}$       c)  $\frac{7}{6}$       d)  $\frac{11}{6}$

3. Fie ecuația  $mx^2 + (m^2 - 2)x + 2(m - 1) = 0$ . Valoarea parametrului  $m \in R$  pentru care între rădăcinile ecuației există relația  $\frac{1}{x_1} + \frac{1}{x_2} = 1$  este:

- a)  $m = -1 - \sqrt{3}$       b)  $m = 1 + \sqrt{3}$   
c)  $m_1 = -1 + \sqrt{7}; m_2 = 1 + \sqrt{5}$       d)  $m_1 = -1 + \sqrt{5}; m_2 = -1 - \sqrt{5}$

4. Suma primilor 60 de termeni ai unei progresii aritmetice cu  $a_1 = -3; a_{61} = 117$  este:

- a) 115;      b) 3450;      c) 3360;      d) 3477

5. Valoarea expresiei  $E(x) = 3\sin^2 x + 3\cos^2 x - 2$  este:

- a) 2      b) 0      c) -1      d) 1

6. Fie șirul  $a_n, n \geq 1$ , cu  $a_1 = -1; a_2 = 2; a_{n+2} = \frac{a_n + a_{n+1}}{2}$ . Primii cinci termeni ai șirului sunt:

- a)  $-1; 2; \frac{1}{2}; \frac{5}{4}; \frac{7}{8};$       b)  $-1; 2; -\frac{1}{2}; \frac{3}{2}; 1;$   
c)  $-1; 2; -\frac{1}{2}; \frac{3}{2}; -1;$       d)  $-1; 2; \frac{1}{2}; \frac{3}{2}; 1.$

7. Se consideră matricile  $A = \begin{pmatrix} 2 & 5 \\ 0 & 4 \end{pmatrix}$  și  $B = \begin{pmatrix} 3 & 0 \\ 1 & -1 \end{pmatrix}$ . Elementul de pe linia 2 coloana 2 în matricea  $2A - 3B$  este :

- a) 10;      b) 11;      c) -11;      d) 0.

8. Conjugatul numărului complex  $2i(-2-5i)$  este :

- a)  $10+4i$       b)  $12-4i$       c)  $8+10i$       d)  $14-10i$

9. Restul împărțirii polinomului  $f(x)=X^4-X+1$  la polinomul  $g(x)=X+1$  este:

- a) 3            b) 2            c) 1            d) 0

10. Dacă notațiile sunt cele utilizate în manualele de fizică, unitatea de măsură în S.I. a mărimii fizice descrise de relația  $U \times I$  este:

- a) A            b) W            c) V            d) kWh

11. Doi rezistori cu rezistențe  $R_1$ , respectiv  $R_2$ , conectați pe rând la bornele aceleiași surse de tensiune, consumă aceeași putere. Rezistența internă a sursei este:

- a)  $\frac{R_1 + R_2}{2}$             b)  $\frac{R_1 - R_2}{2}$             c)  $\sqrt{\frac{R_1 + R_2}{2}}$             d)  $\sqrt{R_1 R_2}$

12. Valoarea rezistenței rezistorului legat paralel cu un ampermetru cu rezistența proprie  $r_0=75\Omega$  în scopul măririi domeniului său de măsură este  $r=50\Omega$ . Rezistența echivalentă a celor doua dispozitive este:

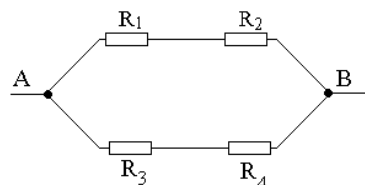
- a)  $130\Omega$             b)  $125\Omega$             c)  $30\Omega$             d)  $55\Omega$

13. Într-un circuit electric simplu, tensiunea la bornele unui generator cu t.e.m.=24V are valoarea  $U=12V$ . Raportul dintre rezistența circuitului exterior și rezistența interioară a generatorului este:

- a) 0,5            b) 1            c) 2            d) 4

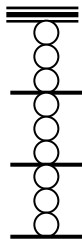
14. Se consideră montajul din figură alimentat la o diferență de potențial constantă între punctele A și B.

- $R_1 = 2 \Omega$ ;  
 $R_2 = 4 \Omega$ ;  
 $R_3 = 6 \Omega$ ;  
 $R_4 = 8 \Omega$ .



- În care rezistor puterea dezvoltată este mai mare?  
a) în  $R_1$ ;            b) în  $R_2$ ;            c) în  $R_3$ ;            d) în  $R_4$

15. Trei corpuri identice sunt agățate de trei resorturi elastice identice cu mase neglijabile ca în figura alăturată. Dacă suma alungirilor celor trei resorturi este 12cm, alungirea resortului inferior este:



- a) 1cm      b) 2cm      c) 4cm      d) 8cm

16. Accelerația unui corp liber pe un plan înclinat de unghi  $\alpha$ , coeficientul de frecare fiind  $\mu$ , este:

- a)  $\mu g \cos \alpha$       b)  $g \sin \alpha$       c)  $g(\sin \alpha + \mu \cos \alpha)$       d)  $g(\sin \alpha - \mu \cos \alpha)$

17. Un corp parcurge prima jumătate din drumul sau cu viteza  $v_1=30\text{km/h}$  și a doua jumătate cu viteza

$v_2=20\text{km/h}$ . Viteza medie realizată pe distanța respectivă este:

- a) 18 km/h      b) 24 km/h      c) 10 km/h      d) 30 km/h

18. Motorul unui autovehicul cu puterea  $P = 81 \text{ Kw}$  asigură deplasarea acestuia cu viteza maximă

$V_{\max}=108 \text{ km/h}$ . În aceste condiții forța de rezistență întâmpinată are valoarea:

- a) 1700N      b) 2700N      c) 1800N      d) 1400N

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FIZICĂ**

**VARIANTA 2**

<b>10.</b>	<b>d</b>
<b>11.</b>	<b>b</b>
<b>12.</b>	<b>d</b>
<b>13.</b>	<b>c</b>
<b>14.</b>	<b>d</b>
<b>15.</b>	<b>a</b>
<b>16.</b>	<b>a</b>
<b>17.</b>	<b>b</b>
<b>18.</b>	<b>a</b>

<b>19.</b>	<b>b</b>
<b>20.</b>	<b>d</b>
<b>21.</b>	<b>c</b>
<b>22.</b>	<b>b</b>
<b>23.</b>	<b>b</b>
<b>24.</b>	<b>c</b>
<b>25.</b>	<b>d</b>
<b>26.</b>	<b>b</b>
<b>27.</b>	<b>b</b>