



SAMPLE QUESTIONS (Science)

Class 12

Important Instructions:

- There are 50 sample questions for each class while the actual paper will be of 100 questions
- Question paper is divided into 5 sections – Physics, Chemistry, Mathematics/Biology, English & Logical Reasoning
- Every question has 1 correct answer
- There will be no negative marking
- All questions carry equal weightage
- Duration of actual exam (with 100 questions) will be 2 hours
- In the actual exam, please read the instructions given on the OMR sheet carefully and submit the completely filled OMR sheet before leaving the exam hall
- In the actual exam, additional 10 minutes will be provided for reading the instructions and filling the OMR sheet.
- In this sample paper, Mathematics and Biology students should only attempt/refer to Mathematics and Biology sections respectively. Rest of the sections will be common for all students.

Name of the Candidate (in Capital letters): _____

Candidate Signature : _____ Invigilator's Signature : _____

20. The reaction between chloral and chlorobenzene in H_2SO_4 yields:

- Chloretone
- p, p-Dichlorodiphenyltrichloroethane.
- o-Chlorobenzaldichloride
- Chloralphenylchloride.

H_2SO_4 में क्लोरल और क्लोरोबेंजेन के बीच अभिक्रिया से उत्पन्न होता है:

- क्लोरोटाइन
- पी, पी-डाइक्लोरोडाइफेनिलट्रिक्लोरोइथेन।
- ओ-क्लोरोबेंज़ोटाईक्लोराइड
- क्लोरलफिनाइलक्लोरोइ

FOR NON-MEDICAL STUDENTS ONLY
Section C – Mathematics

21. A is a square matrix such that $A^2 = I$. Then A^{-1} is

A एक वर्ग मैट्रिक्स है, $A^2 = I$. तब A^{-1} होगा :

- $A + I$
- AI
- Null matrix
- None of these

22. _____

-
-
-
- None of these

23. Let _____ be the roots of _____
 then _____ the value _____ of _____
 is _____

यदि $x^3 + ax + b = 0$ के मूल α, β, γ हैं तो दिए गए व्यंजक का मान निकालिये

- ab
- $-a$
- $-b$
- None of these

24. Let

$A =$

If

B is the inverse of A, then

2 यदि A का प्रतिलोम B है तो $\square =$

- 1
- 2
- 5
- None of these

25.

- 2
- 1
- 1
- 0

26.

- e
-
-
-

27. The number of points where $f(x) = \text{---}$

is not differentiable is are
 बिंदुओं की संख्या जहाँ दिया गया फलन भिन्न नहीं होगा

- 1
- 2
- infinite
- None of these

28. The values of x for which the function

$$f(x) = \begin{cases} 1-x, & x < a \\ (1-x)(2-x), & 1 \leq x \leq 2 \\ 3-x, & x > 2 \end{cases}$$

fails to be

differentiable are (is)

x का मान जिसके लिए फलन भिन्न नहीं होगा

- $x = 1$
- $x = 2$
- $x = 1$ and $x = 2$
- None of these

29. $\tan^{-1} \text{---}$

then value of α is

-
-
-
- None of these

30. If f is a function such that $f(x+y) = f(x) + f(y)$ for all x and y and $f(x) = (2x^2 + 3x)g(x)$ for all x and

$g(x)$ is continuous and $g(0) = 3$, then $f(x) =$
 अगर f ऐसा फलन के x और y सभी मनो के लिए $f(x+y) = f(x) + f(y)$ है, सभी x के लिए $f(x) = (2x^2 +$

- 3x) $g(x)$
 $g(x)$ निरंतर है और $g(0) = 3$, तो $f(x) = ?$
 a. 9
 b. 3
 c. 6
 d. None of these

FOR MEDICAL STUDENTS ONLY
Section C – Biology

- 21.** Asexual method of reproduction by binary fission is common to which of the following?
 (i) Some eukaryotes
 (ii) All eukaryotes
 (iii) Some prokaryotes
 (iv) All prokaryotes
 द्विआधारी विखंडन द्वारा प्रजनन की अस्वाभाविक विधि निम्न में से किस के लिए आम है?
 (i) कुछ यूकैरियोट्स (ii) सभी यूकैरियोट्स
 (iii) कुछ प्रोकैरियोट्स (iv) सभी प्रोकैरियोट्स
 a. (i) and (ii) b. (ii) and (iii)
 c. (i) and (iii) d. (iii) and (iv)
- 22.** A few statements with regard to sexual reproduction are given below:
 (i) Sexual reproduction does not always require two individuals
 (ii) Sexual reproduction generally involves gametic fusion
 (iii) Meiosis never occurs during sexual reproduction
 (iv) External fertilisation is a rule during sexual reproduction Choose the correct statements from the options below:
 यौन प्रजनन के संबंध में कुछ कथनों को नीचे दिया गया है:
 (I) यौन प्रजनन को हमेशा दो जीवों की आवश्यकता नहीं होती है
 (II) यौन प्रजनन में आमतौर पर युग्मकी उर्वरण शामिल है
 (III) यौन प्रजनन के दौरान अर्धसूत्रण कभी भी नहीं होता है
 (IV) यौन प्रजनन के दौरान बाहरी निषेचन एक नियम है

नीचे दिए विकल्पों से सही बयानों को चुनें:

- a. (I) and (IV) b. (I) and (II)
 c. (II) and (III) d. (I) and (IV)
- 23.** A multicellular, filamentous alga exhibits a type of sexual life cycle in which the meiotic division occurs after the formation of zygote. The adult filament of this alga has
 a. haploid vegetative cells and diploid gametangia
 b. diploid vegetative cells and diploid gametangia
 c. diploid vegetative cells and haploid gametangia
 d. haploid vegetative cells and haploid gametangia.
 एक बहुकोशिक, तन्तुक शैवाल (अल्गा) एक प्रकार का यौन जीवन चक्र दर्शाता है जिसमें अर्धसूत्रण युग्मन के गठन के बाद होता है। इस अल्गा के वयस्क फिलामेंट
 a. अगुणित वनस्पति कोशिकाओं और द्विगुणित युग्मक-धानी से बना है
 b. द्विगुणित वनस्पति कोशिकाओं और द्विगुणित युग्मक-धानी से बना है
 c. द्विगुणित वनस्पति कोशिकाओं और अगुणित युग्मक-धानी से बना है
 d. अगुणित वनस्पति कोशिकाओं और अगुणित युग्मक-धानी से बना है
- 24.** Conditions of a karyotype $2n \pm 1$ and $2n \pm 2$ are called:
 a. Aneuploidy b. Polyploidy
 c. Allopolyploidy d. Monosomy
 एक कैरियोटाइप $2n \pm 1$ और $2n \pm 2$ को कहा क्या जाता है?
 a. असगुणिता b. बहुगुणिता
 c. अपर बहुगुणिता d. एकगुणिता
- 25.** If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is:
 a. Autosomal dominant
 b. Autosomal recessive
 c. Sex-linked dominant
 d. Sex-linked recessive
 यदि कोई आनुवंशिक बीमारी जीनप्ररूप से सामान्य

लेकिन वाहक मादा से केवल कुछ पुरुष संतानों में स्थानांतरित हो जाती है, तो बीमारी है:

- अलिंगसूत्री प्रमुख
- अलिंगसूत्री अप्रवाभि
- लिंग सहलग्न प्रमुख
- लिंग सहलग्न अप्रवाभि

26. In sickle cell anaemia glutamic acid is replaced by valine. Which one of the following triplets codes for valine?

सिकल सेल एनीमिया में ग्लूटामिक एसिड को वैलाइन से बदल जाता है। निम्न तीन में से कौन सी कोड वैलाइन के लिए है?

- | | |
|----------|----------|
| a. G G G | b. A A G |
| c. G A A | d. G U G |

27. Mother and father of a person with 'O' blood group have 'A' and 'B' blood group respectively. What would be the genotype of both mother and father?

- Mother is homozygous for 'A' blood group and father is heterozygous for 'B'
 - Mother is heterozygous for 'A' blood group and father is homozygous for 'B'
 - Both mother and father are heterozygous for 'A' and 'B' blood group, respectively
 - Both mother and father are homozygous for 'A' and 'B' blood group, respectively
- 'O' रक्त वर्ग वाले व्यक्ति के माता और पिता क्रमशः 'A' और 'B' रक्त वर्ग है। माता और पिता दोनों के जीनप्ररूप क्या होंगे?

- माँ 'A' रक्त वर्ग के लिए समयुग्मजी है और पिता 'B' के लिए विषमयुग्मजी है
- माँ 'A' रक्त वर्ग के लिए विषमयुग्मजी है और पिता 'B' के लिए समयुग्मजी है
- दोनों माता और पिता क्रमशः 'A' और 'बी' रक्त वर्ग के लिए विषमयुग्मजी हैं
- दोनों माता और पिता क्रमशः 'A' और 'B' रक्त वर्ग के लिए समयुग्मजी हैं

28. Choose the correct option regarding Retrovirus:

- An RNA virus that can synthesise DNA during infection
- A DNA virus that can synthesise RNA during infection

c. A ssDNA virus

d. A dsRNA virus

रेट्रोवायरस के बारे में सही विकल्प चुनें:

- एक आर.एन.ए विषाणु जो संक्रमण के दौरान डी.एन.ए को संश्लेषित कर सकता है
- डी.एन.ए विषाणु जो संक्रमण के दौरान आर.एन.ए का संश्लेषण कर सकता है
- एक ssDNA विषाणु
- एक dsRNA विषाणु

29. The trigger for activation of toxin of *Bacillus thuringiensis* is:

- Acidic pH of stomach
 - High temperature
 - Alkaline pH of gut
 - Mechanical action in the insect gut
- बैसिलस थुरिंजिनसिस के विष को क्या सक्रिय करता है?

- पेट के अम्लीय (एसिडिक) pH
- उच्च तापमान
- पेट की क्षारीय (एल्कलाइन) पीएच
- कीट आंत में यांत्रिक क्रिया

30. Silencing of a gene can be achieved through the use of:

- RNAi only
- antisense RNA only
- both RNAi and antisense RNA
- none of the above

जीन साइलेंसिंग प्राप्त करने का माध्यम है:

- केवल RNAi का उपयोग
- केवल एंटीसेंस RNA का उपयोग
- दोनों RNAi और एंटीसेंस RNA का उपयोग
- उपर्युक्त में से कोई नहीं

Section D – English

Directions (Q. No. 31 to 34) Complete this passage by selecting the most suitable word/phrase from list to fit the corresponding gap.

One of the most brutal features of gender inequality takes the form of physical violence against women. The **31.** ___ of such

violence is remarkably high, not only in poorer and less developed economies, but also in wealthy and modern societies. Indeed, the **32.** ___ of battering women even in the richest and most developed economies is **33.** _____ high. Turning to India, it must be **34.** _____ first that the frequency of assaults on women is high in the country and the society needs to do something about it.

- 31.** Which of these fits gap 31?
- | | |
|--------------|---------------|
| a. frequency | b. occurrence |
| c. event | d. chance |
- 32.** Which of these fits gap 32?
- | | |
|----------------|------------------|
| a. relatively | b. clearly |
| c. undoubtedly | d. astonishingly |
- 33.** Which of these fits gap 33?
- | | |
|-----------------|--|
| a. accomplished | |
| b. acknowledged | |
| c. cleared | |
| d. understand | |
- 34.** Which of these fits gap 34?
- | | |
|-----------------|---------------|
| a. expectations | b. counting |
| c. incidence | d. acceptance |

Directions (Q. No. 35 & 40) Read the following information in passage and answer the questions given below.

Depletion of other minerals on a global scale in some what difficult to determine, partly because recycling complicates the issues, partly because trade goes on in all directions and partly because one material can sometimes be replaced by another. Figures from the US Geological Survey indicate that within the US most types of minerals and other non-renewable resources are well past their peak dates of production. Besides oil, these include bauxite (peaking in 1943), copper (1998), iron ore (1951), magnesium (1966), phosphate rock (1980), potash (1967),

rare Earth metals (1984), tin (1945), titanium (1964) and zinc (1969). The depletion of these resources swiftly inspite of recycling.

In the past, it was iron ores such as natural hematite (Fe_2O_3) that were being mined. For thousands of years, also tools were produced by melting bog iron, mainly goethite, $\text{FeO}(\text{OH})$, in clay cylinders only a meter or so in height. Modern mining must rely more heavily on taconite, a flint like ore containing less than 30% magnetite and hematite.

Iron ore of the sort that can be processed with primitive equipment is becoming scarce, in other words and only the less-tractable forms such as taconite will be available, when the oil powered machinery has disappeared a chicken and egg problem. To put it more bluntly with the types of iron ore used in the past, a fair proportion of the human race would have been able to survive in the post-industrial world. With taconite it will not.

- 35.** What prevents the determination of depletion of other minerals on a global scale?
- | | |
|-------------------------------------|--|
| a. Recycling | |
| b. Trade goes on in all directions | |
| c. One material replaced by another | |
| d. All of these | |
- 36.** The depletion of which resources continues swiftly in spite of recycling
- | | |
|-------------|-----------------|
| a. oil | b. magnesium |
| c. titanium | d. All of these |
- 37.** Which was the ancient iron ore being mined?
- | | |
|----------------------------|----------------------------|
| a. Fe_2O_3 | b. $\text{FeO}(\text{OH})$ |
| c. Taconite | d. Magnetite |
- 38.** Which of the following iron ore is found in less tractable forms?
- | | |
|----------------------------|-----------------------|
| a. Fe_2O_3 | b. FeO (ore) |
| c. Taconite | d. Magnetite |
- 39.** Which mineral became scarce in year 1984?
- | | |
|---------------------|--|
| a. Copper | |
| b. Rare Earth metal | |

