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CBSE : Class VI to X & XI-XII Science, English Medium

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CLASS – XII

MATHEMATICS ANSWER KEY

[Q.1] The principal value of $\sin^{-1}\left(\sin\frac{5\pi}{3}\right)$ is

(a) $\frac{5\pi}{3}$

(b) $-\frac{5\pi}{3}$

(c) $-\frac{\pi}{3}$

(d) $\frac{4\pi}{3}$

ANS - C

[Q.2] $\sin^{-1}x+\sin^{-1}\frac{1}{x}+\cos^{-1}x+\cos^{-1}\frac{1}{x}=$

(a) π

(b) $\frac{\pi}{2}$

(c) $\frac{3\pi}{2}$

(d) None of these

ANS - A

[Q.3] $\begin{vmatrix} 0 & a & -b \\ -a & 0 & c \\ b & -c & 0 \end{vmatrix} =$

(a) -2abc

(b) abc

(c) 0

(d) $a^2 + b^2 + c^2$

ANS - C

[Q.4] The value of the determinant given below

$\begin{vmatrix} 1 & 2 & 3 \\ 3 & 5 & 7 \\ 8 & 14 & 20 \end{vmatrix}$ is

(a) 20

(b) 10

(c) 0

(d) 5

ANS - C

[Q.5] For any square matrix A, AA^T is a

(a) Unit matrix

(b) Symmetric matrix

(c) Skew symmetric matrix

(d) Diagonal matrix

ANS - B

[Q.6] Function $f : R \to R, f(x) = x^2 + x$ is

(a) One-one onto

(b) One-one into

(c) Many-one onto

(d) Many-one into

ANS - D

[Q.7] If $f(x) = \begin{cases} \dfrac{1-\cos x}{x}, & x \neq 0 \\ k, & x = 0 \end{cases}$ is continuous at $x = 0$ then k =

(a) 0

(b) $\frac{1}{2}$

(c) $\frac{1}{4}$

(d) $-\frac{1}{2}$

ANS - A

[Q.8] If y = sec x^0, then $\frac{dy}{dx} =$

(a) sec x^0 tan x^0

(b) sec x^0 tan x^0

(c) $\frac{\pi}{180}\sec x^0 \tan x^0$

(d) $\frac{180}{\pi}\sec x^0 \tan x^0$

ANS - C

[Q.9] On the interval $\left(0, \frac{\pi}{2}\right)$, the function log sin x is

(a) Increasing

(b) Decreasing

(c) Neither increasing nor decreasing

(d) None of these

ANS - A

[Q.10] $\int \frac{ax^{-2} + bx^{-1} + c}{x^{-3}} dx =$

(a) $2ax^2 + 3bx^3 + 4cx^4 + k$

(b) $6ax^2 + 4bx^3 + 3cx^4 + k$

(c) $a + b + cx^2 + k$

(d) $\frac{1}{2}ax^2 + \frac{1}{3}bx^3 + \frac{1}{4}cx^4 + k$

ANS - D

[Q.11] $\int \frac{(\tan^{-1} x)^3}{1+x^2} dx =$

(a) $(\tan^{-1} x)^4 + c$

(b) $\frac{(\tan^{-1} x)^4}{4} + c$

(c) 2 $\tan^{-1}$ x + c

(d) 2 $(\tan^{-1} x)^2$ + c

ANS - B

[Q.12] $\int_0^{\pi/2} \log \tan x dx =$

(a) $\frac{\pi}{2}\log_e 2$

(b) $-\frac{\pi}{2}\log_e 2$

(c) $\pi \log_e 2$

(d) 0

ANS - D

[Q.13] The order and the degree of the differential equation $\left(\frac{d^2s}{dt^2}\right)^2 + 3\left(\frac{ds}{dt}\right)^3 + 4 = 0$ are

(a) 2,2

(b) 2,3

(c) 3,2

(d) None of these

ANS - A

[Q.14] There are two children's in a family. The probability that both of them are boys is

(a) $\frac{1}{2}$

(b) $\frac{1}{3}$

(c) $\frac{1}{4}$

(d) None of these

ANS - C

[Q.15] In tossing 10 coins, the probability of getting exactly 5 heads is

(a) $\frac{9}{128}$

(b) $\frac{63}{256}$

(c) $\frac{1}{2}$

(d) $\frac{193}{256}$

ANS - B

[Q.16] $\frac{d}{dx}(\log_e x)(\log_a x) =$

(a) $\frac{\log_a x}{x}$

(b) $\frac{\log_x x}{x}$

(c) $\frac{2\log x}{x}$

(d) $\frac{2\log_a x}{x}$

ANS - D

[Q.17] $\frac{d}{dx}[\tan^{-1}(\frac{a-x}{1+ax})] =$

(a) $-\frac{1}{1+x^2}$

(b) $\frac{1}{1+a^2} - \frac{1}{1+x^2}$

(c) $\frac{1}{1+(\frac{a-x}{1+ax})^2}$

(d) $\frac{-1}{\sqrt{1+(\frac{a-x}{1+ax})^2}}$

ANS - A

[Q.18] $\int \frac{x^{e-1} + e^{x-1}}{x^e + e^x} dx =$

(a) $\log(x^e + e^x) + c$

(b) $e\log(x^e + e^x) + c$

(c) $\frac{1}{e}\log(x^e + e^x) + c$

(d) None of these

ANS - C

[Q.19] $\int_0^{\frac{\pi}{4}} \frac{\sec^2 x}{(1+\tan x)(2+\tan x)} dx =$

(a) $\log_e(\frac{2}{3})$

(b) $\log_e 3$

(c) $\frac{1}{2}\log_e(\frac{4}{3})$

(d) $\log_e(\frac{4}{3})$

ANS - D

[Q.20] The differential equation of the family of curves y = a cos(x+b) is

(a) $\frac{d^2y}{dx^2} - y = 0$

(b) $\frac{d^2y}{dx^2} + y = 0$

(c) $\frac{d^2y}{dx^2} + 2y = 0$

(d) None of these

ANS - B

CHEMISTRY

[Q.1] Rate constant for a reaction is 7.239 x $10^{-4}$$sec^{-1}$ the order of reaction will be :

(a) 0 (b) 1

(c) 2 (d) 3

ANS - B

[Q.2] Gold number is related to

(a) electrophoresis

(b) purple of cassius

(c) Protection of colloids

(d) amount of pure gold

ANS - C

[Q.3] the geometry of $XeoF_2$ is :

(a) Pyramidal (b) T-Shape

(c) Octahedral (d) Tetrahedral

ANS - B

[Q.4] The hydride of group 15 having largest bond angle is :

(a) NH_3 (b) PH_3

(c) ASH_3 (d) BiH_3

ANS - A

[Q.5] Which element has the highest first confiscation potential

(a) Ti (b) Mn

(c) Fe (d) Ni

ANS – B

PHYSICS

[Q.1] Which one of the following statements is correct about the magnification of an optical microscope?

(a) Magnification increases with the increase in focal length of eyepiece

(b) Magnification increases with the increase in focal length of objective

(c) Magnification does not depend upon the focal length of eyepiece

(d) Magnification decreases with the increase in focal length of eyepiece

ANS - D

[Q.2] The radii of curvature of the faces of a double convex lens are 10 cm and 20 cm. The refractive index of the glass is 1.5. What is the power of this lens (in units of dioptre)?

(a) +7.5D

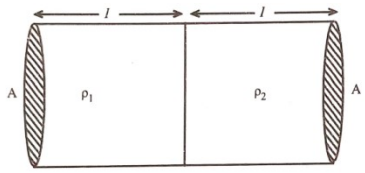
(b) -7.5D

(c) +2.5D

(d) +5.0D

ANS - A

[Q.3] Two rods having equal lengths and equal cross-sections but different specific resistances ρ_1 and ρ_2 are joined at one end as shown in the figure given above. What is the effective specific resistance of the combination?



(a) $\frac{\rho_1\rho_2}{\rho_1+\rho_2}$

(b) $\frac{\rho_1+\rho_2}{2}$

(c) $\rho_1+\rho_2$

(d) $\frac{\rho_1+\rho_2}{2(\rho_1+\rho_2)}$

ANS - C

[Q.4] Which one of the following is the correct sequence of the wavelengths of radiations?

(a) UV>Green>IR>Hard X-rays

(b) IR>Green>UV>Hard X-rays

(c) UV>Hard X-rays>IR>Green

(d) IR>Hard X-rays>Green>UV

ANS - B

[Q.5] Which of the following statements is true?

(a) Electrostatic force is a conservative force

(b) Potential at a point is the work done per unit charge in bringing a charge from any point to infinity

(c) Electrostatic force is non-conservative

(d) Potential is the product of charge and work

ANS - A

ENGLISH

[Q.1] Select the correct part of speech of the highlighted word

She works very Carefully

(a) Adjective (b) Adverb

(c) Verb (d) Article

ANS - B

[Q.2] Select the correct part of speech of the highlighted word

Sanaya has a very lovely dog.

(a) Determiner (b) Adjective

(c) Adverb (d) Noun

ANS - B

[Q.3] Choose the correct option

I'd like to go __ in the park.

(a) to walking (b) for walk

(c) for a walk (d) to walk

ANS - C

[Q.4] Choose the correct meaning of the given idiom

Those were only crocodile tears.

(a) Very gloomy (b) Mild regret

(c) Pretended sadness (d) A weeping sign

ANS - C

[Q.5] Choose the correct option

We couldn't find a taxi, __ we walked home.

(a) So (b) Because

(c) But (d) Although

ANS - A

[Q.6] Choose the correct synonym of the given word:

Rigid

(a) Solid (b) Bent

(c) Hard (d) Sticky

ANS - C

[Q.7] Choose the correct antonym of the given word.

ENORMOUS

(a) Soft (b) Average

(c) Tiny (d) Weak

ANS - C

[Q.8] Choose the correct option

'How old __?' 'I __ .'

(a) Are you / am 20 years old.

(b) Have you / have 20 years old

(c) Are you / am 20 years.

(d) Do you have / have 20 years.

ANS - A

[Q.9] Choose the correct option

'___ to the cinema tomorrow'?

(a) We will go (b) Do we go

(c) We go (d) Shall we go

ANS - D

[Q.10] She is __ her sister, I think.

(a) More happier than (b) More happy that

(c) Happier that (d) Happier than

ANS - D

GENERAL KNOWLEDGE

[Q.1] Which of the following statement is not true about the Indian National Congress?

(a) It was formed in 1885

(b) W.C Bannerjee was the first president of congress

(c) It was formed when 72 delegates from all the presidencies and provinces of India met at Bombay

(d) Its founder, Allan Octavian Hume, was a retired British professor in India

ANS - D

[Q.2] Bhagat Singh was executed in which of the following case:

(a) Lahore conspiracy case

(b) Central Assembly bomb case

(c) Kakori case

(d) Dalhousie square bomb case

ANS - B

[Q.3] Who was the political Guru of Mahatma Gandhi Ji?

(a) Gopal Krishna Gokhale

(b) Dayanand Saraswati

(c) Ravindra Nath Tagore

(d) None of the above

ANS - A

[Q.4] Which of the following geographical term related to a body of land surrounded by water on three sides?

(a) Peninsula

(b) Gulf

(c) Strait

(d) Island

ANS – A

[Q.5] Which of the following States has the longest coastline?

(a) Goa

(b) Gujarat

(c) Andhra Pradesh

(d) Kerala

ANS - B

[:Q.6] Which of the following was included as part of the land reforms initiated in India?

(a) Abolition of intermediaries

(b) Tenancy reforms

(c) Reorganization of agriculture

(d) All the above

ANS - D

[Q.7] Consider the statement (s) related to the green revolution.

1. Excess land was acquired by the government and redistributed among the landless
2. Ceiling laws were passed in all the states during the 1st FYP period

Which of the following is/are correct statement (s)?

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

ANS - C

[:Q.8] Which of the following rivers do not discharge its water into the Bay of Bengal?

(a) Mahanadi

(b) Cauvery

(c) Tapti

(d) Godavari

ANS - C

[Q.9] Name an antiviral medicine used for a clinical trial by Gilead Sciences for COVID-19 treatment?

(a) Favipiravir

(b) Triazavirin

(c) Remdesivir

(d) None of the above

ANS - C

[:Q.10] What is the correct decreasing order of the officers in the Indian Army?

(a) Field marshal, General, Lieutenant General and Major General

(b) General, Field marshal, Lieutenant General and Major General

(c) General, Lieutenant General, Major General and field marshal

(d) General, Field marshal, Lieutenant General and Major General

ANS - A