

01 | If $|x| < \frac{1}{3}$, then find the coefficient of x^n in the expansion of $(1-5x+6x^2)^{-1}$. [$|x| < \frac{1}{3}$ n] $(1-5x+6x^2)^{-1}$ Gi x^n Gi mnM Ki |]

02 | If $x^2 - px + q = 0$ and $x^2 - ax + b = 0$ got a common root and the roots of the second equation are equal then show that, $b + q = \frac{1}{2}ap$. [$x^2 - px + q = 0$ Ges $x^2 - ax + b = 0$ mgxKi Y Yi GKU mvavi Y gj K Ges Zxq mgxKi Yi Y gj mgvb nq, Zte L th, $b + q = \frac{1}{2}ap$]

03 | In ΔABC prove that $4\Delta(\cot A + \cot B + \cot C) = a^2 + b^2 + c^2$
 $[\Delta ABC -G \text{ c} \text{Y} \text{Ki} 4\Delta(\cot A + \cot B + \cot C) = a^2 + b^2 + c^2]$

04 | Find the acute angle at which the line $3x - y - 1 = 0$ intersects the circle $(x - 2)^2 + y^2 = 5$.
 [3x - y - 1 = 0 mi j ti Lv (x - 2)^2 + y^2 = 5 eEtk th m¶|tkvtY tq` Kti Zv wby¶ Ki |]

05 | The vertex of the parabola $y = ax^2 + bx + c$ is $(-2, 3)$ and it passes through the point $(0, 5)$.
 Determine the values of a, b, c . [$y = ax^2 + bx + c$ ci ve¶Ei kxl (-2, 3) we` ¶Z Aew`Z Ges Bnv
 (0, 5) we` yw` tq AwZµg Kti | a, b, c Gi gvb wby¶ Ki |]

06 | If $x = e^\theta \sin \theta$ and $y = e^\theta \cos \theta$ then show that, $\frac{d^2x}{dy^2} = \frac{\operatorname{cosec}^2\left(\frac{\pi}{4} - \theta\right)}{e^\theta (\cos\theta - \sin\theta)}$

[$x = e^\theta \sin \theta$ Ges $y = e^\theta \cos \theta$ ntj t` Lvl th, $\frac{d^2x}{dy^2} = \frac{\operatorname{cosec}^2\left(\frac{\pi}{4} - \theta\right)}{e^\theta (\cos\theta - \sin\theta)}$]

07 | What is the probability that a student gives wrong answers to exactly 5 questions out of 25 Math MCQs of KUET Admission test if he/she answers all the questions? (Where each MCQ has 5 options) [KUET fWZ©ciX¶|vq GKRb QvÎ MmYZ weI tqi MCQ Astk 25 wU cØkè me ,tj v DÈi Ki tj wK cuPwU cØkè DÈi fj nI qvi mætebv KZ? (thLvfb ciZwU MCQ tZ 5vU Kti Ackb _v#K)]

08 | $\int \frac{x^2 - \sin^2 x}{1 - x^2} \sec^2 x \, dx = ?$

০৯ | Four force P, 2P, 3P, 4P are acting on each side of a square. Find the value of resultant and direction. [একটি বর্গক্ষেত্রের বাহুগুলো বরাবর একইক্রমে P, 2P, 3P, 4P মানের চারটি বল কার্যরত। এদের লব্ধির মান ও ক্রিয়াদিক নির্ণয় কর।]

10| A satellite is revolving the Earth 4 km above the surface, find the orbital velocity of the satellite ($R = 6380 \text{ km}$, $g = 9.8 \text{ ms}^{-2}$) [GKIJ Kwîg DcMñ cŰ_exi Pvi w ðK f-cô nðZ 4km Dcîi eËvKvi cð_ Nj ðQ| cŰ_exi eËvma©6380 km Ges f-cðô g Gi gvb 9.8ms⁻² nðj DcMñwJi ði wLK teM wbY© Ki]

11| A metal sphere of radius $4 \times 10^{-4} \text{ m}$ is falling through glycerin with terminal velocity of $6.5 \times 10^{-3} \text{ ms}^{-1}$. Density of the metal and that of glycerin are 11.37×10^3 and $1.26 \times 10^3 \text{ kg.m}^{-3}$ respectively. Determine the coefficient of viscosity of glycerin. [$4.0 \times 10^{-4} \text{ m}$ eËvmta© GKIJ avZe ðMvj K wMwvi ðbi wfZi w ðq $6.5 \times 10^{-3} \text{ ms}^{-1}$ cðŠteM wbðq cotQ| avZi I wMwvi ðbi NbZ; h_vµðg 11.37×10^3 Ges $1.26 \times 10^3 \text{ kg.m}^{-3}$ nðj , wMwvi ðbi mð` ZvsK wbY© Ki |]

12| In a cylinder of volume $1 \times 10^{-2} \text{ m}^3$ oxygen gas is stored at temperature 300K and pressure $2.5 \times 10^5 \text{ Nm}^{-2}$. After using some oxygen, pressure becomes $1.3 \times 10^5 \text{ Nm}^{-2}$. Determine the amount of oxygen used. [$1 \times 10^{-2} \text{ m}^3$ AvqZb wewkó GKIJ wmwj Ûvði 300K ZvcgvÎvq I $2.5 \times 10^5 \text{ Nm}^{-2}$ Pvc Aw ðRb fWZ©Kði ivLv nðqðQ| GKB ZvcgvÎvq wKQz Aw ðRb eËenvi Kivi ci Pvc $1.3 \times 10^5 \text{ Nm}^{-2}$ nðj v| eËeüZ Aw ðRðbi cwi gvY wbY© Ki |]

13 | Density of oxygen at N.T.P is 1.43 kg m^{-3} . Find molar specific heat at constant pressure (C_p) and molar specific heat at constant volume (C_v). Density of oxygen at N.T.P is 1.43 kg m^{-3} ($\gamma = 1.4$) [আমি প্রতিদিনে আর্গন থেকে গ্যাসের আর্গন থেকে C_v । আর্গন থেকে গ্যাসের আর্গন থেকে C_p ।] $\gamma = 1.4$ [আমি প্রতিদিনে আর্গন থেকে গ্যাসের আর্গন থেকে C_v । আর্গন থেকে গ্যাসের আর্গন থেকে C_p ।]

14 | A stationary wave in a stretched string is defined by the equation $y = 0.48 \sin 0.16x \cos 32t$. x and y are measured in meter and t is measured in second. Find out the amplitude and velocity of the waves from which the stationary wave is produced. [$y = 0.48 \sin 0.16x \cos 32t$ x । y t ।] $y = 0.48 \sin 0.16x \cos 32t$ x । y t ।

১৫। A 200V–100W bulb and a 200V–60W bulb is connected in series and connected to a 200 volt supply. Find the electric power spent in each lamp. [একটি 200V–100W বাতি ও একটি 200V–60W বাতিকে শ্রেণী সমবায়ে যুক্ত করে 200 Volt সরবরাহ লাইনে যুক্ত করা হলো। প্রত্যেকটিতে ব্যয়িত তড়িৎ ক্ষমতার মান নির্ণয় কর।]

১৬। Peak value of a sine wave is 14.14V. It is applied on a 5Ω resistor. Determine r.m.s value of voltage difference across of the resistor and r.m.s value of current through the resistor and find peak value. [একটি সাইন তরঙ্গের শীর্ষমান 14.14V। একে 5Ω রোধের দু-প্রান্তে প্রয়োগ করা হল। রোধের দু-প্রান্তের বিভব প্রভেদের rms মান এবং রোধের মধ্য দিয়ে বিদ্যুৎ প্রবাহের rms এবং শীর্ষ মান নির্ণয় কর।]

17| The range of vision of a short-sighted person extends between the distance of 10 cm and 50 cm from the eye. Find the focal length of the spectacle lenses which he must wear to see distant objects at his far point. [নিকটদৃষ্টিগ্রস্তের দৃষ্টি পরিসর 10 cm থেকে 50 cm পর্যন্ত। চশমার লেন্সের ফোকাল দৈর্ঘ্য নির্ণয় কর।]

18| Light of frequency 5.0×10^{14} Hz liberates electrons with energy 2.31×10^{-19} J from a certain metal surface. Determine the work function. [5.0×10^{14} Hz ফ্রিকোয়েন্সির আলো একটি ধাতুর পৃষ্ঠ থেকে 2.31×10^{-19} J শক্তির ইলেকট্রন নির্গত করে। কাজের ফাংশন নির্ণয় কর।]

22 | What is the pH of 75ml $\frac{M}{5}$ HCl and 25ml $\frac{M}{5}$ NaOH ? [75ml $\frac{M}{5}$ HCl Ges 25ml $\frac{M}{5}$ NaOH `eYi pH KZ ?]

- 23 | (i) Why do Phosphorus, Arsenic, Antimony form X_4 molecules? [dmdi vm, AvtmK, A`vUgwb X_4 AYyMVb Kti tKb ?]
- (ii) In how many and what ways can the elements of group V(A) form compounds? [M`c V(A) Gi tgSj , tj v wK wK Dcvtq thSM MVb Ki tZ cvti ?]
- (iii) Although Nitrogen is found in nature as a sole element, but phosphorus is not –why? [bvBtUtRbtK gyB Ae`vq cvl qv tMtj l dmdi vmtK cKwZ gyB Ae`vq cvl qv hvq bv tKb ?]

24 | Write down the formula: [mstKZ wj L t]

(i) Glauber's salt (Mewi j eY)

(ii) Plaster of Paris (cvevi Ae c`wim)

(iii) Soda Ash (tmWv A`vk)

(iv) Water glass (cwb KuP)

(v) Luner Costic (j pvi Kw÷K)

- 25 | (i) Write down the length of the carbon chain in L.P gas, petrol, kerosene, gas oil, lube oil.
 [Gj .m.M'vm, tctUij , tKtiwmb, M'vm Atqj I jyeKwUs Atqij KveB wkKij i ^^N°wj L |]
- (ii) Write the structural formulas and uses of the compounds -Sulphanilamide and Ampetemin.
 [myj dmbj vgvBW I A'v'p'ú'Uwgb-G `wJ thšMi MwVbK mstKZ Ges e'envi wj L |]
- (iii) What will be the pH of 0.4g HNO₃ is dissolved in water to produce 200 ml solution?
 [0.4g HNO₃ cwbZ `xfZ Kti AvqZb 200 ml Kij Gi pH KZ nte ?]

- 26 | The pH of a buffer solution of 1 liter volume having 0.5M CH₃COOH and 0.5M CH₃COONa is 4.76. Calculate the value of pH if (i) 0.1M HCl is added (ii) 0.1M NaOH is added. (K_a = 1.75×10⁻⁵)
 [0.5M CH₃COOH I 0.5M CH₃COONa wwkó 1 wj Uvi AvqZtbi tKvb evdvi `tYi pH = 4.76, pH Gi gvb MYbv Ki hw` GtZ- (i) 0.1M HCl thwM Kiv nq, (ii) 0.1M NaOH thwM Kiv nq | (K_a = 1.75×10⁻⁵)]

- 27 | How can you synthesis glacial phosphoric acid from phosphoric acid?
 [dmdwi K GmW t_tK wKifc tMwqj dmdwi K GmW ^Zwi Kite ?]

Read the following passage and answer to the questions 28–30 below:

Anthrax is an acute disease caused by the bacteria *Bacillus anthracis*. Most forms of the disease are lethal and have effects both of humans and animals. *Bacillus anthracis* can form dormant spores that are able to survive in harsh conditions for decade or even centuries. Anthrax commonly infects wild and domesticated herbivorous mammals which ingest or inhale the spores while grazing. Ingestion is thought to be the most common route of spreading anthrax. It does not spread from one infected animal or person to another directly; it is spread by spores. Occupational exposure to infected animals or their products (skin, wool and meat) is the usual pathway of exposure for humans. Anthrax can enter human body through the intestines (ingestion), lungs (inhalation) or skin (cutaneous). All of cases detected in Bangladesh so far have been of the cutaneous variety. It was first detected in Sirajgonj on August 20 in Bangladesh and spread in Pabna, Tangail, Kushtia, Meherpur, Chittagong, Chuadanga, Panchagadh, Lalmonirhat, Narayangonj and Dhamrai. Anthrax situation is worsening in Bangladesh day by day. Patient isolation is not required. Antibiotic therapy usually results in dramatic recovery if given before onset or immediately after onset of illness. The antibiotic treatment should be continued for 60 days. Effective decontamination of people can be accomplished by a through wash down with anti-microbial soap and water. Decontamination of articles can be accomplished by boiling contaminated articles in water for 30mins or longer. Chlorine bleach is ineffective while formaldehyde is effective. Delays of only a Few days in treating anthrax may make the disease untreatable, so early antibiotic treatment is essential. When it is detected in a herd, remaining animals should be removed from the field. Anthrax is now a public health concern. So, the government needs to be more serious about the issue.

28. **Write down whether the following statements are true or false. If false, give the correct information.**

(A) The reason of anthrax is *Bacillus utopea*.

(B) Anthrax can enter human bodies in three ways.

(C) Anthrax was first detected in Bangladesh in September 20.

(D) Anthrax is a contageous disease.

(E) Chlorine bleach is ineffective while Formaldehyde is effective.

29. **Fill in the blanks with appropriate words connected with the passage:**

- (A) _____ exposure to infected animals or their products is the usual pathway of exposure for humans.
- (B) All the cases detected so far in Bangladesh are of _____ type.
- (C) Anthrax commonly infects wild and _____ mammals.
- (D) Anthrax is an _____ disease.
- (E) Antibiotic therapy results in dramatic _____.

30. **Fill in the gaps with appropriate idiomatic expressions:**

Fight shy of	In a nutshell	Get rid of	In cold water
In hot water	In the guise of	In toto	In vain
Nip in the bud			

- (A) He always tries to _____ responsible people who are serious, since he is very insincere.
- (B) Over the matter about human rights, he is _____.
- (C) He went there to meet his beloved _____ a beggar.
- (D) He has copied the document from the website _____.
- (E) All his hopes after his father's death are almost _____.

ivd

Exam Code : MT5

২০১০-২০১১ শিক্ষাবর্ষ

ভর্তি পরীক্ষা : শনিবার, ৩০ শে অক্টোবর, ২০১০

সময়: { মডিউল A: 09.00 am - 10.30 am (MCQ)
মডিউল A: 10.45 am - 12.15 pm (Written)

বাংলাদেশ প্রকৌশল বিশ্ববিদ্যালয় ভর্তি পরীক্ষার অনুরূপ উত্তরপত্র

মডিউল A (MCQ)	পরীক্ষার্থী বড় ও সঠিক করিয়া ইংরেজিতে পূরণ করিবে								
	দরখাস্তের ক্রমিক নং				ভর্তি পরীক্ষার রোল নম্বর				

GB vMi bxP tKvb wKQy tj Lv mYwbwl x

পূর্ণ নম্বর : ৩০০

omeca

সময় : ১ ঘণ্টা ৩০ মিনিট

Model Test-05

পরিদর্শকের স্বাক্ষর : -----

গুরুত্বপূর্ণ নির্দেশনা: OMR Form G-তে সঠিকভাবে উত্তর চিহ্নিত করুন।
GK PZ-কিছু ভুল উত্তর থেকে ১/৪ নম্বর কাটা হবে।

Answers to questions in this section of the module is to be marked on the OMR Form. One fourth marks from another correct answer will be deducted for each incorrect answer.

জরুরী তথ্যাবলী :

- সর্বমোট ১২০টি প্রশ্ন আছে। পরীক্ষার্থী প্রশ্ন পাওয়ার সাথে সাথে সমস্ত প্রশ্নের উত্তর দিতে হবে।
১২০ (GKKZ nek) উত্তর দিতে হবে।
১২০ (GKKZ nek) উত্তর দিতে হবে।
- OMR Form G-তে সঠিকভাবে উত্তর চিহ্নিত করুন।
- কোনো ভুল উত্তর থেকে ১/৪ নম্বর কাটা হবে।

নির্দেশাবলী :

- দরখাস্তের ক্রমিক নং ও ভর্তি পরীক্ষার রোল নম্বর সঠিকভাবে উত্তর চিহ্নিত করুন।
- উত্তর চিহ্নিত করার সময় সঠিকভাবে উত্তর চিহ্নিত করুন।
- কোনো ভুল উত্তর থেকে ১/৪ নম্বর কাটা হবে।
- কোনো ভুল উত্তর থেকে ১/৪ নম্বর কাটা হবে।

omeca

Engineering Admission Coaching

(ছাত্র-ছাত্রী কর্তৃক পূরণীয়)

Name	
College	
Roll No.	
Branch	
Batch No.	
Room No.	

- 01 | If the complex numbers $x + 3i$ and $-2 + iy$ are conjugate, then what are values of x and y ?
 [hw` x + 3i Ges -2 + iy ci`úi AbpÛx nq Zte x Ges y Gi gvb KZ ?]
- (A) $x = 2, y = -3$ (B) $x = -2, y = 3$ (C) $x = 2, y = 3$ (D) $x = -2, y = -3$
- 02 | The cofactor of '0' in the determinant $\begin{vmatrix} 23 & 0 & 3 \\ -3 & 1 & 5 \\ -1 & 2 & 9 \end{vmatrix}$ is $-\begin{vmatrix} 23 & 0 & 3 \\ -3 & 1 & 5 \\ -1 & 2 & 9 \end{vmatrix}$ wbyqtki '0'-Gi mn, YK KZ ?]
- (A) 22 (B) 24 (C) -22 (D) -24
- 03 | In how many ways can the letters of the word 'daughter' be rearranged so that the vowels do not change their relative positions? [↑eYtj v wtrt` i gta` Avtcw|K Ae`vb cwieZb bv Kti 'daughter' kãUtk KZfvte cpweb`vm Kiv hvte ?]
- (A) 6720 (B) 6719 (C) 719 (D) 4319
- 04 | If the coefficients of the 6th and 7th terms beginning from the rear in the expansion of $(a + 2x)^8$ are equal in value, then find the value of a . $[(a + 2x)^8$ Gi we`vfi tk| t_+K 6th Ges 7th ct` i mnM mgvb ntj a-Gi gvb KZ ?]
- (A) $a = 1$ (B) $a = 4$ (C) $a = 2$ (D) none of these
- 05 | What is the coefficient of x^3 in the expansion of $\frac{(1+x)^3}{1-x}$? $[\frac{(1+x)^3}{1-x}$ Gi we`wZtZ x^3 Gi mnM KZ ?]
- (A) 4 (B) 8 (C) 1 (D) 2
- 06 | The quadratic equation with root $\sqrt{-5} - 1$ is \tilde{N} $[\sqrt{-5} - 1$ gj weikó wNvZ mgxKi YwU nj \tilde{N}]
- (A) $x^2 + 2x + 3 = 0$ (B) $x^2 + 2x + 5 = 0$ (C) $x^2 + 2x + 6 = 0$ (D) $x^2 + 2x + 4 = 0$
- 07 | If the n -th term of a series is $\left(\frac{1}{n} - \frac{1}{n+2}\right)$, then find the summation of the first n terms of the series. [hw` tKvb avivi n-Zg c` $\left(\frac{1}{n} - \frac{1}{n+2}\right)$ nq Zte aviwUi 1g n ct` i mgwó wbyq Ki |]
- (A) $1 - \frac{2n+3}{(n+1)(n+2)}$ (B) $\frac{3}{2} - \frac{2n+3}{(n+1)(n+2)}$ (C) $\frac{3}{2} - \frac{3n+2}{(n+1)(n+2)}$ (D) $\frac{3}{2} - \frac{2n+3}{(n+1)(n+2)}$
- 08 | Which one of the following conditions is true to expand $\ln(1-5x+6x^2)$ in higher powers of x .
 $[\ln(1-5x+6x^2)$ -tk x-Gi D`PZi NvtZ we`wi Kivi Rb` wtpi tKvb kZw mZ` ?]
- (A) $-\frac{1}{2} < x \leq \frac{1}{2}$ (B) $-\frac{1}{2} \leq x < \frac{1}{2}$ (C) $-\frac{1}{3} \leq x < \frac{1}{3}$ (D) $-\frac{1}{3} < x \leq \frac{1}{3}$
- 09 | What is the fundamental period of $\sin x \sin 3x$? $[\sin x \sin 3x$ Gi tgšj K chq KZ ?]
- (A) $\frac{\pi}{2}$ (B) π (C) 2π (D) 3π
- 10 | If $\tan \theta = \frac{y}{x}$, then $-x \sin 2\theta + y \cos 2\theta = ?$ [hw` $\tan \theta = \frac{y}{x}$ nq Zte, $-x \sin 2\theta + y \cos 2\theta = ?$]
- (A) x (B) $\frac{x^2 - y^2}{x^2 + y^2}$ (C) y (D) $-y$

- 21 | The edge of a variable cube is increasing at the rate of 10cm/s. If its edge is 5cm long then its rate of increase of volume is: [GKJ cwi eZ0kj Nb†Ki evû epxi nvi 10cm/s | hw` GKJ evû 5cm nq Zvn†j AvqZb epxi nvi KZ ?]
- (A) 250 cm³/s (B) 500 cm³/s (C) 750 cm³/s (D) 450 cm³/s
- 22 | If $(AB)_{16} = (10x0y011)_2$, then what are the values of x and y? [(AB)₁₆ = (10x0y011)₂ n†j x Ges y Gi gv b KZ ?]
- (A) x = 1, y = 0 (B) x = 0, y = 0 (C) x = 1, y = 1 (D) x = 0, y = 1
- 23 | $P(A) = \frac{1}{4}$, $P(B) = \frac{1}{3}$, $P(A' \cap B') = \frac{1}{2}$, then $P\left(\frac{A'}{B}\right) = ?$ [$P(A) = \frac{1}{4}$, $P(B) = \frac{1}{3}$, $P(A' \cap B') = \frac{1}{2}$ n†j , $P\left(\frac{A'}{B}\right) = ?$]
- (A) $\frac{3}{4}$ (B) $\frac{2}{3}$ (C) $\frac{1}{3}$ (D) $\frac{1}{4}$
- 24 | hw` $y = \sec x^\circ$ nq Zvn†j , $\frac{dy}{dx} = ?$ [If $y = \sec x^\circ$, then the value of $\frac{dy}{dx}$ is:]
- (A) $\sec x \tan x$ (B) $\sec x^\circ \tan x^\circ$ (C) $\frac{\pi}{180} \sec x^\circ \tan x^\circ$ (D) $\frac{180}{\pi} \sec x^\circ \tan x^\circ$
- 25 | GK c`v†KJ Kvw†_†K 3wJ Kvw†U†b †Zvj v nj | `BwJ †U°v cvevi m†ebv †ei Ki | [3 Cards are drawn at random from a pack of 52 cards. Find the probability of getting 2 aces.]
- (A) $\frac{72}{5525}$ (B) $\frac{{}^4C_2 \times {}^{48}C_1}{{}^{52}C_3}$ (C) $\frac{172}{5525}$ (D) Both A & B
- 26 | What is the area of the region surrounded by the parabola and the line $y = 1$? [$x^2 = 4y$ ci veĚ Ges $y = 1$ ti Lv Øvi v Ave× Ast†ki †¶† dj KZ ?]
- (A) $\frac{8}{3}$ eM°GKK (B) $\frac{2}{3}$ eM°GKK (C) $\frac{4}{3}$ eM°GKK (D) none of these
- 27 | $\int \frac{2x^2 + 7x + 6}{3x + 4} dx = Ax^2 + Bx + C + D \ln(3x + 4)$ n†j A = ?
- [If $\int \frac{2x^2 + 7x + 6}{3x + 4} dx = Ax^2 + Bx + C + D \ln(3x + 4)$, then A = ?]
- (A) $\frac{2}{3}$ (B) $\frac{1}{3}$ (C) $\frac{1}{6}$ (D) $\frac{5}{6}$
- 28 | $\int_{-1}^1 \{|x| + x\}^3 dx = ?$
- (A) 1 (B) 2 (C) 0 (D) 4
- 29 | $\frac{dy}{dx} = 2x^{-\frac{1}{2}}$ n†j y = ?
- (A) \sqrt{x} (B) $2\sqrt{x}$ (C) $\frac{2}{\sqrt{x}}$ (D) none of these

36| From a height of 4.9 m a thief jumps down the earth with a 20 Kg heavy box on his head. When he is falling, what is the pressure of the box on his head? [4.9m D^oPZv n^oZ GKwJ tPvi gv_vq 20 Kg fvi x ev. wbtq j vcl w` j | cZbKvtj Zvi gv_vq KZ Pvc cofe ?]

- (A) 20 Kg-wt (B) 196 N (C) kb^o (D) none of these

37| A body of mass 10 kg is suspended with a spring. If the body moves upward with acceleration 0.4 m/s², determine the tension of the spring. [10kg fi wewkó e⁻tK w⁻có ai mnvuth^o tSvj v^obv nj | e⁻wJ 0.4m/s² ZijY wbtq Dc^oi DV^otj w⁻có ai Uvb KZ ?]

- (A) 102N (B) 100N (C) 120N (D) 200

38| A body falls freely from rest. It covers as much distance in the last second of its motion as covered in the first five seconds. The body has fallen for- [GKwJ e⁻w⁻ive⁻v n^oZ gy^o fivte wbtP cto|GwJ Gi cZbKvtj i tkl tmtKt^oU c^og cuP tmtKt^oU mgvb `tZi AwZµg Kti | e⁻wJi cZbKvj nj -]

- (A) 5s (B) 8s (C) 11s (D) 13s

39| Two bodies are projected with the same velocity. If one is projected at an angle of 30° and the other at 60° to the horizontal, then ratio of maximum heights reached is- [GKB te^oM `wJ e⁻tK wbt^oq|c Kiv n^otj v| hw^o Ab^ofvt^oKi mv^ot_ GKwJ e⁻ 30° tKvtY Ges Aci e⁻ 60° tKvtY c^oq|B nq Zte e⁻o^otqi mte^oP D^oPZvi Ab^ocvZ KZ ?]

- (A) 3 : 1 (B) 1 : 3 (C) 1 : 2 (D) 2 : 1

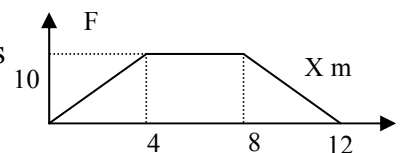
40| A 20N stone is suspended from a wire and its lengths changes by 1%. If the Young's modulus of the material of the wire is 2×10¹¹ N/m², the area of cross section of the wire is- [GKwJ Zvi n^oZ 20N I R^otbi GKwJ cv_i Sj v^obv n^otj Bnvi `N^o1%cwiewZ^o nq| hw^o Zvti i c⁻v^ot_^o Bqs Gi `YvsK 2×10¹¹ N/m² nq, Zvn^otj Zvti i c^ot^oQ^o i t^oq|^odj N]

- (A) 10⁻³ mm² (B) 10⁻² mm² (C) 10⁻¹ mm² (D) 1 mm²

41| A flywheel starts from rest and gains a speed of 540 rpm in 6 seconds. Angular acceleration of flywheel will be- [GKwJ dvB^oUj w⁻i Ae⁻v t⁻tK 6s-G 540 rpm MwZ j vf Kti | Gi tK^oSwYK ZijY nte^oN]

- (A) 3π rads⁻² (B) 9π rads⁻² (C) 18π rads⁻² (D) 27π rads⁻²

42| A particle of mass 0.1 kg is subjected to a force with distance as shown in figure. If it starts its journey from rest at x = 0, its velocity at x = 12m is- [0.1 kg f^oti i GKwJ KYvi Dci c^oq|^o ej Ges mi^otYi m^oúK^owbtPi t^oj L wP^ot^o t⁻ Lv^obv n^otq^oQ| KYwJ x = 0 Ae⁻vb t⁻tK hv^ot^ov i^o i^o Ki^o t^oj x = 12m Ae⁻v^otb Gi te^oM KZ ?]



- (A) 0m/s (B) 20√2 m/s (C) 20√3 m/s (D) 40 m/s

50| An open resonating tube has a fundamental frequency of n . when half of its length is dipped into water, then its fundamental frequency will be— [GKIJ tLvj v Abbv` mjoKvix btj i tgSij K KruvsK n. hLb Bnvi AfaR Ask cmbi bxtP Wpvtbv nq ZLb tgSij K KruvsK KZ nte ?]

- (A) $\frac{n}{2}$ (B) n (C) $2n$ (D) $\frac{3}{2}n$

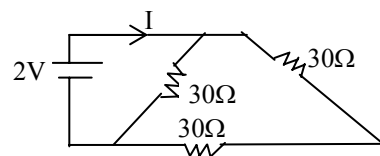
51| For the stationary wave $y = 4\sin(\pi x / 15) \cos(96 \pi t)$, the distance between a node and the next anti-node is— [w`i Zi 1/2 y = 4sin(pi x/15) cos(96pi t) Gi Rb` GKIJ vb`u` we`y l cieZP my`u` we`j `tZijnj -]

- (A) 7.5 cm (B) 15 cm (C) 22.5 cm (D) 30 cm

52| For the production of beats, the two source must have— [exU DrcuEi Rb` Dm 0tqi Aek`B vKteN]

- (A) same amplitude (GKB we`hi)
 (B) different amplitude (wfbwe`hi)
 (C) same amplitude and same phase (GKB we`hi Ges GKB`kv)
 (D) different frequencies and same amplitude (wfbKruvsK wK>ZlGKB we`hi)

53| The current in the circuit shown in the figure is— [wPtI Kvti uI I-Gi gvbnj -]



- (A) $\frac{1}{45}A$ (B) $\frac{1}{15}A$ (C) $\frac{1}{10}A$ (D) $\frac{1}{5}A$

54| Two electrolytic cells containing $CuSO_4$ and $AgNO_3$ respectively are connected in series, and a current is passed through them until 1 mg of copper is deposited in the first cell. The mass of silver deposited in the second cell during this time is (atomic weights of copper and silver are 63.58 and 107.88 respectively)— [$CuSO_4$ | $AgNO_3$ `eY mruve`jW Zwor wetkHK tKv tK wmi tR hy³ Kiv nq Ges Zwor cewnz Kiv nq hZq]b chS-c0g tKv t 1 mg Kcvi Rgv nq | wZxq tKv t RgvKZ ifcvi cwigvY KZ nte ? (Kcvi l ifcvi cvigvYweK fi h_vutg 63.58 Ges 107.88)]

- (A) 1.7 mg (B) 3.4 mg (C) 5.1 mg (D) 6.8 mg

55| Three capacitors of capacitance $3\mu F$, $10\mu F$ and $15\mu F$ are connected in series to a source of voltage 100V. The charge on the $15\mu F$ capacitor is— [$3\mu F$, $10\mu F$ Ges $15\mu F$ avi KtZji wZbW avi KtK 100V wefe Drtmi mvt_ wmi tR hy³ Kiv nj $15\mu F$ avi tKi Avatbi cwigvY KZ ?]

- (A) $50\mu C$ (B) $100\mu C$ (C) $200\mu C$ (D) $280\mu C$

56 | The half life of radium is about 1600 years. If 100g of radium is existing now the 25g will remain unchanged after– [ti Wvqtgi Aafqy 1600 eQi | GB gytZ 100 g AqZ vKtj 25 g AqZ vKte– eQi ci |]

- (A) 2400 years (B) 3200 years (C) 4800 years (D) 6400 years

৫৭ | A metal whose work function is 3.3eV is illuminated by light of wavelength 3×10^{-7} m. What is the threshold frequency for photoelectric emission? [3.3eV কার্য অপেক্ষক এর একটি ধাতু 3×10^{-7} m তরঙ্গ দৈর্ঘ্যের একটি আলো দ্বারা আলোকিত হচ্ছে। আলোক নিঃসরণের তড়িৎ কম্পাঙ্ক কত ?]

- (A) 0.4×10^{15} Hz (B) 0.8×10^{15} Hz (C) 1.6×10^{15} Hz (D) 3.2×10^{15} Hz

58 | The rest mass of an electron is 9×10^{-31} kg. When it is moving with 4/5th the speed of light, its mass will be– [w'í Ae'vq GKwU Btj KU#bi fi 9×10^{-31} tKwR | hLb GwU Avtj vi tetMi 4/5 Astki mg cwi gvY tetM MwZkxj nq ZLb Gi fi KZ ?]

- (A) 9×10^{-31} kg (B) 3×10^{-31} kg (C) 15×10^{-31} kg (D) 91×10^{-31} kg

৫৯ | Two straight and narrow parallel slits are 0.3 cm apart are illuminated by a monochromatic source of wavelength 5.9×10^{-5} cm. Fringes are obtained at a distance of 30 cm from the slit. Find the width of the fringes. [vU mgvS+vj mi" wPo 0.3 cm `#i Aew'Z; hv 5.9×10^{-5} cm Zi 1/2 `tN'P GKeyrAvtj v Øvi v Avtj vKZ nt"Q | wPo ntZ 30 cm `#i tWwiv cvl qv tMj | tWwiv,tj v cØ'ev `tZ; wbyq Ki |]

- (A) 5.9×10^{-3} cm (B) 5.9×10^{-5} cm (C) 10.5×10^{-3} cm (D) 10.5×10^{-5} cm

60 | Critical angle of glass for air is 42° . Critical angle of water for air is 48° . Which one is the critical angle of glass for water– [evqj mvtctq] Kv#Pi msKU tKvY 42° evqj mvtctq] cwbi msKU tKvY 48° ntj cwbi mvtctq] Kv#Pi msKU tKvY–]

- (A) 64.2° (B) 56.96° (C) 0.99° (D) 1.12°

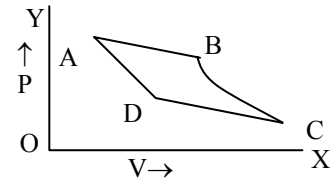
61 | If a object is placed at a distance of $3/2 f$ in front of a concave lens of focal length f , find the magnification. [GKwU e'f tdvKvm `tZji GKwU AeZj `c#Yi mvgtb $3/2 f$ `#i vcb Kiv ntj | ev'– e cØZwet# AvKvi e'í AvKv#i i KZ ,Y nte ?]

- (A) 1/2 (B) 3 (C) 2 (D) 1/3

62 | In a p-n junction flow of current is found 600mA for 2V change and 900mA for 2.3mA. Find dynamic resistance. [GKwU p–n Rsktb 2 V wfevS#i i Rb" Ziwrcevn 600 m A Ges 2.3 V Gi Rb" Ziwrcevn 900mA | Gi MZxq tiva KZ ?]

- (A) 2.55Ω (B) 3.33Ω (C) 1Ω (D) 1.22Ω

63| In the following P–V diagram the points B and C correspond to temperatures T_1 and T_2 respectively. It can be concluded that– [cvtkP PNV tj LwPtI B Ges C wv`y h_vµtg T_1 Ges T_2 ZvcgvI v wbt` R Kti | G t_tK ej v hvqN]



- (A) $T_1 = T_2$ (B) $T_1 > T_2$
 (C) $T_1 < T_2$ (D) nothing can be said about T_1/T_2

64| To send 10% of the main current, through a moving coil galvanometer of resistance 99Ω , the shunt required is– [99Ω ti va mæubæPj KÛj x M'vj fvbwgUvti i ga` w` tq gj Zwor cævtni 10% cvwtZ cÛqvRbxq mæU KZ nte ?]

- (A) 9.9Ω (B) 10Ω (C) 11Ω (D) 9Ω

65| The magnetic flux with a coil is given by the equation: $\phi = 5t^2 + 3t + 16$ Wb. The e.m.f. induced in the coil in the fourth second will be– [GKwJ KËj xtZ mshy³ tP\$æK dv. tK wbtgæ mgxKiY Øviv cKvk Kiv hvq $\phi = 5t^2 + 3t + 16$ Wb. PZL`tmKtÛ Aweó Zwo`Pvj K etj i gvb nteN]

- (A) 11 V (B) 25 V (C) 43 V (D) 86 V

66| The length of telescope is 100cm and magnification is 19. The focal lengths of objective and eyelens are nearly– [GKwJ btfv` tæx¶Y htšj` N° 100cm Ges weea® 19| Awfj ¶` | AwftbtI i tdivKvm` tZintZ cvtiN]

- (A) 90cm and 10cm (B) 85cm and 15cm (C) 80cm and 20cm (D) 95cm and 5cm

67| A 40Ω electric heater is connected to a 200V, 50 Hz main supply. The peak value of electric current flowing in the circuit is approximately– [40Ω tivtai GKwJ `e` ywZK nxUvi 200V, 50 Hz mi eivn j vBtb hy³ | Zwor cævtni mtePp gvb (Peak value) KZ nteN]

- (A) 2.5A (B) 5.0A (C) 7A (D) 10A

68| The intensity level of a sound of intensity I is 30 dB. The ratio I/I_0 is– (where I_0 is the threshold of hearing) [tKvb ktæi ZæZv tj tfj I = 30 dB. I/I_0 Gi AbçvZ nteN (thLvfb I_0 kætYi Rb` b`bZg cÛqvRbxq ZæZv tj tfj)]

- (A) 3000 (B) 1000 (C) 300 (D) 30

69| Which of the following substance has the highest elasticity? [wbtgæ tKvbwUj w`wZ`vcKZv metPtq teuk ?]

- (A) steel (B) copper (C) rubber (D) sponge

70| Which out of the following does not support the wave nature of light? [wbtgæ tKvbwU Awtj vi Zi½ cKwZtK mg_® Kti bv ?]

- (A) interference (e⁻ wave) (B) diffraction (A⁺ Z⁺)
 (C) polarization (magnetic field) (D) photo-electric effect (Av⁺ v⁺ K Z⁺ or μ qv)

71 | The internal energy of a perfect gas does not change during ? [t⁺ K⁺ v⁺ t⁺ K⁺ G⁺ K⁺ W⁺ Av⁺ k⁺ M⁺ v⁺ t⁺ mi A⁺ S⁺ -' k⁺ W⁺ i c⁺ mi e⁺ Z⁺ nq bv ?]

- (A) adiabatic process (i⁺ x⁺ Z⁺ v⁺ c⁺ x⁺ c⁺ μ qv) (B) isothermal process (mg⁺ Z⁺ v⁺ c⁺ x⁺ c⁺ μ qv)
 (C) isobaric process (mg⁺ P⁺ v⁺ c⁺ x⁺ c⁺ μ qv) (D) isochoric process (mg⁺ Av⁺ q⁺ Z⁺ b⁺ c⁺ μ qv)

72 | What is the value of Least Count in screw gauge? [t⁺ M⁺ t⁺ R⁺ j⁺ v⁺ N⁺ o⁺ , Y⁺ K⁺ Gi⁺ g⁺ v⁺ b⁺ t⁺ K⁺ v⁺ b⁺ W⁺ ?]

- (A) 0.01mm (B) 0.01cm (C) 0.01m (D) none

73 | What is the relative rotation of d-lactic acid? [d⁺ -j⁺ v⁺ K⁺ W⁺ J⁺ K⁺ G⁺ m⁺ t⁺ W⁺ i Av⁺ t⁺ c⁺ v⁺ t⁺ K⁺ Ave⁺ Z⁺ t⁺ K⁺ v⁺ b⁺ W⁺ ?]

- (A) +2.24° (B) + 1.12° (C) -1.12° (D) -2.24°

74 | Which of the following is true? [v⁺ b⁺ t⁺ P⁺ i t⁺ K⁺ v⁺ b⁺ Z⁺ m⁺ Z⁺ ?]

- (A) Only Sc and Cu show +1 oxidation state (t⁺ K⁺ e⁺ j⁺ g⁺ v⁺ Sc Ges Cu Gi⁺ t⁺ e⁺ j⁺ v⁺ q⁺ +1 R⁺ v⁺ i Y⁺ m⁺ s⁺ L⁺ v⁺ t⁺ L⁺ v⁺ q⁺)
 (B) All 3d elements show +3 oxidation state (3d t⁺ g⁺ s⁺ j⁺ m⁺ g⁺ n⁺ +3 R⁺ v⁺ i Y⁺ Ae⁺ v⁺ c⁺ k⁺ K⁺ t⁺ i)
 (C) Group IIA elements have catalytic power (M⁺ l⁺ c⁺ IIA t⁺ g⁺ s⁺ j⁺ m⁺ g⁺ n⁺ c⁺ f⁺ v⁺ e⁺ b⁺ t⁺ q⁺ l⁺ g⁺ Z⁺ v⁺ c⁺ k⁺ v⁺ k⁺ K⁺ t⁺ i)
 (D) NH₃CH⁻ are mono dentate ligand (NH₃CH⁻ n⁺ j⁺ g⁺ t⁺ b⁺ v⁺ t⁺ W⁺ b⁺ t⁺ U⁺ U⁺ v⁺ j⁺ M⁺ v⁺ U⁺)

75 | What is the color of Iron? [t⁺ j⁺ v⁺ n⁺ v⁺ (Fe) av⁺ Z⁺ i e⁺ Y⁺ q⁺ W⁺ K⁺ ?]

- (A) Silver color (i⁺ f⁺ c⁺ v⁺ j⁺ v⁺) (B) Ash color (Q⁺ v⁺ B⁺ i s)
 (C) White color (m⁺ v⁺ v⁺) (D) reddish black (j⁺ v⁺ j⁺ t⁺ P⁺ K⁺ v⁺ t⁺ j⁺ v⁺)

76 | What is the source of Mn. [g⁺ v⁺ v⁺ 1/2 w⁺ b⁺ R⁺ D⁺ r⁺ m⁺ t⁺ K⁺ v⁺ b⁺ W⁺ ?]

- (A) Carnotite (K⁺ v⁺ i t⁺ b⁺ v⁺ U⁺ v⁺ B⁺ U⁺) (B) Pyrolusite (c⁺ v⁺ B⁺ t⁺ i v⁺ j⁺ v⁺ n⁺ v⁺ B⁺ U⁺)
 (C) Limonite (v⁺ j⁺ t⁺ g⁺ v⁺ m⁺ v⁺ B⁺ U⁺) (D) Smal tite (t⁺ s⁺ j⁺ v⁺ U⁺ v⁺ B⁺ U⁺)

77 | Oxidation number of Mn for K₂MnO₄ and KMnO₄ are respectively- [Mn⁺ G⁺ K₂MnO₄ i KMnO₄ Gi R⁺ v⁺ i b⁺ m⁺ s⁺ L⁺ v⁺ h⁺ v⁺ μ t⁺ g⁺ N⁺]

- (A) +6,+7 (B) +6, +6 (C) +7, +7 (D) +7, +6

78 | [Cr(NH₃)₆]³⁺ Ges [Co(NH₃)₆]³⁺

- (A) both are diamagnetic (D⁺ f⁺ t⁺ q⁺ B⁺ W⁺ v⁺ q⁺ v⁺ M⁺ t⁺ b⁺ W⁺ J⁺ K⁺)
 (B) both are paramagnetic (D⁺ f⁺ t⁺ q⁺ B⁺ c⁺ v⁺ i v⁺ g⁺ v⁺ M⁺ t⁺ b⁺ W⁺ J⁺ K⁺)
 (C) Paramagnetic, diamagnetic (c⁺ v⁺ i v⁺ g⁺ v⁺ M⁺ t⁺ b⁺ W⁺ J⁺ K⁺, W⁺ v⁺ q⁺ v⁺ M⁺ t⁺ b⁺ W⁺ J⁺ K⁺)
 (D) Diamagnetic, paramagnetic (W⁺ v⁺ q⁺ v⁺ M⁺ t⁺ b⁺ W⁺ J⁺ K⁺, c⁺ v⁺ i v⁺ g⁺ v⁺ M⁺ t⁺ b⁺ W⁺ J⁺ K⁺)

79 | Which of the following is not produced during reaction among benzene diazonium chloride & potassium chloride? [t⁺ e⁺ b⁺ v⁺ R⁺ b⁺ W⁺ v⁺ q⁺ t⁺ R⁺ w⁺ b⁺ q⁺ v⁺ g⁺ t⁺ K⁺ v⁺ i v⁺ B⁺ t⁺ W⁺ i m⁺ v⁺ t⁺ c⁺ U⁺ w⁺ m⁺ q⁺ v⁺ g⁺ Av⁺ t⁺ q⁺ W⁺ v⁺ B⁺ t⁺ W⁺ i w⁺ e⁺ μ v⁺ q⁺ v⁺ v⁺ b⁺ t⁺ P⁺ i t⁺ K⁺ v⁺ b⁺ W⁺ D⁺ r⁺ c⁺ b⁺ a⁺ n⁺ q⁺ b⁺ v⁺ ?]



(A) I (B) N₂I (C) KCl (D) N₂

80 | Which one is the overlapping of π bond? [†KvbwU π -eU†bi Awapugb ?]

(A) sp³-sp³ (B) sp³-p (C) p-p (D) sp-s

81 | Smell of orange- [Kgj vi MÜ †Kvb G÷v†i i gZÑ]

(A) Iso amyl acetate (B) Methyl butyrate (C) Octyl acetate (D) amyl butyrate

82 | Which is surf powder? [mvd©cvDWwi †KvbWU ?]

(A) Sodium loryl sulfate (†mvmWqvg j i vBj mvj †dU)

(B) Sodium Alkyl benzene sulfate (†mvmWqvg A`vj KvBj †ebwRb mvj †dU)

(C) Sodium alkyl sulfate (†mvmWqvg Avj KvBb mvj †dU)

(D) Sodium Carboxylate (†mvmWqvg Kve® †j U)

83 | Which one is needed to convert CO₂ into O₂ in a closed places of submarine and airplane-

[W†evRvnr I D†ovRvnr Gi e× RvqMvq CO₂ †K O₂ G cwi YZ Ki †Z j v†M-]

(A) ZnO (B) Cu₂O (C) CuO (D) Na₂O₂

84 | In a solution of base MOH, the concentration of the solution is x mol L⁻¹, then pH is- [MOH

Gi ¶vi xq `††Y, `††Yi Nbgv†v x molL⁻¹ n†j , pH nq-]

(A) -logx (B) -log(14-x) (C) 14-logx (D) 14+logx

85 | For the synthesis of HI, the equilibrium constant is 50. The degree of dissociation of HI is-

[HI Gi m††k††Yi †¶†† mvq`a†K 50. HI Gi w††qvRb gv††v n††e-]

(A) 0.22 (B) 0.10 (C) 0.35 (D) 0.50

86 | In 0.01 M solution of perchloric acid at 25°C, the sum of pH and pOH is equal to- [25°C

Zvcgv†vq 0.01M cvi †Kwi K Gvm†Wi `††Y pH I pOH Gi thvMdj -]

(A) 14 (B) 12 (C) 7 (D) unpredictable (Aw††Y†)

87 | A patient has 162 miligram/deciliter glucose in his blood. What is the value of it in

milimol/liter unit? [GKRb †ivMxi i††i M†Kv†Ri cwi gvY 162 wg.M†g/†Wm. vj Uvi | wgij †gvj /vj Uvi

GK†K Gi gv† KZ ?]

(A) 9 (B) 8 (C) 0.008 (D) 0.09

88 | 75% of a first order reaction was completed in 32 minutes. 50% of the reaction was

completed in- [GKwU c†g µg w††p†qv† 75% m††ú†††Z mgq j v†M 32mins. w††p†qv††i 50% m††ú†††e n†Z mgq j v†M†††]

(A) 4min (B) 8min (C) 16min (D) 24min

- 89 | Same mass of CH_4 and H_2 is taken in a container. The partial pressure caused by H_2 is— [CH_4 Ges H_2 Gi mgcwi gvY fi GKwU cvtĀ t̄bqv n̄tj v | H_2 Øvi v cĤy³ AvsġkK Pvc n̄tj vÑ]
- (A) $\frac{8}{9}$ (B) $\frac{1}{9}$ (C) $\frac{1}{2}$ (D) 1
- 90 | Eka-aluminium and Eka-silicon are known as respectively [GKv-A^{ij} v̄gwbqvg Ges GKv-vm̄ij Kb h_v̄µt̄g w̄b̄t̄Pi t̄Kvb bvt̄g cwi w̄PZ ?]
- (A) gallium and germanium (B) aluminium and silicon
(C) iron and sulphur (D) proton and silicon
- 91 | Malt is a source of what enzyme? [gĕ t̄Kvb GbRvB̄t̄gi Drm ?]
- (A) RvB̄t̄gR (zymase) (B) Wvq̄t̄ ÷ R (diastase) (C) ḡt̄ĕvR (maltose) (D) Bb̄fvi t̄UR (invertase)
- 92 | The four quantum numbers of the valence electron of potassium are— [cUw̄mq̄t̄gi thvRbx B̄t̄j KŪt̄bi Pvi w̄U t̄Kvq̄Uvg m̄sL^{iv} nj -]
- (A) 4, 1, 1, $\frac{1}{2}$ (B) 4, 0, 0, $\frac{1}{2}$ (C) 4, 5, 0, $\frac{1}{2}$ (D) 4, 4, 0, $\frac{1}{2}$
- 93 | 50ml of 0.2N HCl, 50ml of 0.1N H_2SO_4 and 100ml of 0.2N HNO_3 are mixed. The normality of the resulting solution is: [50ml 0.2N HCl, 50ml 0.1N H_2SO_4 Ges 100ml 0.2N HNO_3 t̄K w̄ḡw̄k^Z Kiv nj | w̄ḡw̄k^Z `ĕt̄Yi bi ḡw̄ij w̄U nj Ñ]
- (A) 0.1 (B) 0.15 (C) 0.175 (D) 0.2
- 94 | Pyroligneous acid contains— [cvB̄t̄i w̄ij Mbvm Ḡm̄t̄W _v̄t̄KÑ]
- (A) Acetic acid 6-7%, methyl alcohol 4-4.5%, acetone 2.5%
(B) Acetic acid 4-5%, methyl alcohol 3-3.5%, acetone 1.5%
(C) Acetic acid 9-10%, methyl alcohol 2-2.5%, acetone 0.5%
(D) Acetic acid 3-4%, methyl alcohol 3-3.5%, acetone 1.5%
- 95 | A nucleotide consists of— [w̄b̄D̄w̄k^t UvB̄t̄W Av̄t̄QÑ]
- (A) Kve⁸ w̄P̄w̄b (carbon sugar) (B) bvB̄t̄Ūt̄Rb ¶̄vi K (nitrogen containing base)
(C) dm̄t̄d̄w̄i K Ḡm̄W (phosphoric acid) (D) Dc̄t̄i i me⁵ t̄j v (all of these)
- 96 | Which reagent of the following is used to show the difference between HCOOH and CH_3COOH ? [HCOOH | CH_3COOH Gi ḡt̄a^{iv} cv^{—R} t̄^{iv} Lv̄t̄bvi Rb^{iv} w̄b̄t̄gĕ t̄Kvb w̄eKvi K e^{iv}envi Kiv nq ?]
- (A) Tollens reagent (Ūt̄j b w̄eKvi K) (B) FeCl_3 solution (FeCl_3 `ĕY)
(C) NaOH solution (NaOH `ĕY) (D) Na_2CO_3 solution (Na_2CO_3 `ĕY)
- 97 | Aniline is purified by— [A^{iv}w̄b̄ij t̄bi w̄e^{iv} ×KiY Kiv Kiv nq t̄Kvbw̄Uj Øvi v—]
- (A) AvsġkK cvZb (fractional distillation) (B) mv̄avi Y cvZb (simple distillation)
(C) ev^{iv} úx̄ cvZb (steam distillation) (D) None
- 98 | The most suitable method of converting ethanol into iodoethane would be to— [B_vbj t̄K Avq̄t̄WvB̄t̄ t̄b cwi YZ Kivi mēt̄P̄t̄q m̄yeavRbK c×w̄Z n̄tj v]
- (A) reflux iodine and ethanol (Av̄t̄q̄w̄w̄b | B_vbj wi d̄v^{iv} K̄t̄i)

(B) allow ethanol and KI to react in presence of dilute acid (j NyA~~re~~ gva"tg B_vbj I cUwmqvg AvtqWvBW wep_uqv Kti)

(C) reflux red phosphorous, ethanol and iodine (j vj dmdivm, B_vbj I AvtqWvB wi d~~r~~ Kti)

(D) react ethanol with copper (I) iodide in the cold (VUv Ae⁻vq B_vbj I Kcvi (I) AvtqWvBW wep_uqv Kti)

99 | Position of double bond in alkenes can be identified by– [A⁻vj wKtb Gi gta" wEÜb Gi Ae⁻vb wBY^q Kiv hvq hvi gva"tg]

(A) Bromine water (tehg_b cw_b)

(B) Ammonical silver nitrate solution (A⁻v^gw_bqvKvj w_mj fvi bvBtUU `èY)

(C) Ozonolysis (I tRvtbj vBwm)

(D) None of above (Dc^ti i tKvbUvB bq)

100 | Chloropicrin is used as– [tKv^ti w_cKw_i b e⁻envi Kiv nq–]

(A) Anaesthetic (tPZbv_bvkKi f_c)

(B) Insecticide (KxU_bvkK)

(C) Hypnotic (nvB^tc^hWJK)

(D) all (me)

101 | Polymer of methanal are– [di gvj w_vn_vBW Gi cwj gvi nt"QÑ]

(A) Polymethanal, Trioxane, Bakelite (Cwj v_g_v_b"vj , U^hBA^t. b, e⁻v^tKj vBU)

(B) Paraldehyde, metaldehyde (C⁻i vj w_vn_vBW, tgUvj w_vn_vBW)

(C) 2, 4 DNP, RDX, Delrin, Urotropin (2, 4 w_vG_bw_c, Avi w_vG_. , tWj wi b, BD^ti v^tU^hw_cb)

(D) Dacron, Melamine resin, Urea formaldehyde resin (tWKi b, tgj v_gv_B ti w_b, BD^wi qv di gvj w_vn_vBW ti w_b)

102 | When diethyl ether is heated with hydrogen iodide, then the compound formed is/are– [hLb w_vB_b_v_B B⁻vi tK nvB^tw^tRb AvtqWvB^twi m^t_ DEß Kiv nq, ZLb th th^hM Drcb^wqÑ]

(A) C₂H₅I

(B) C₂H₅OH

(C) C₂H₂ and C₂H₅NH₂

(D) C₂H₅OH and C₂H₂I

103 | In which of the following case, the reaction goes fast to completion– [w_bt_ge^t tKvb t^qt^t wep_uqv_u met^tq `Z m⁻úY^qnt^eÑ]

(A) K_c = 10³

(B) K_c = 10

(C) K_c = 10⁻²

(D) K_c = 1

104 | The maximum number of 3d-electrons having spin quantum number. $s = +\frac{1}{2}$ is– [w⁻ úb

tKv_qv_uvg m_sL⁻v s = + $\frac{1}{2}$ we_wkó m^te^hP KZ_s t_j v 3d-B^tj ±b ntZ cv^ti ?]

(A) 10

(B) 5

(C) 2

(D) 1

105 | The dissociation energy of CH₄ and C₂H₆ are respectively 1508 KJ mol⁻¹ and 2594 KJ mol⁻¹ respectively. The bond energy of C–C bond is– [CH₄ I C₂H₆ Gi we^tq_vRb kw³ h_vµ^tg 1508 KJ mol⁻¹ and 2594 KJ mol⁻¹ nt_j C–C Gi eÜb kw³–]

(A) 332 KJ mol⁻¹

(B) 316 KJ mol⁻¹

(C) 806 KJ mol⁻¹

(D) 320 KJ mol⁻¹

106 | Chrome green is— [†µvq Mbb nq—]

- (A) Cr_2O_3 (B) $\text{K}_2\text{Cr}_2\text{O}_7$ (C) PbCrO_4 (D) $\text{PbCrO}_4 \cdot \text{PbO}$

107 | The relative lowering of vapour pressure of a solution of 6g of urea in 90g of water is close to— [90g cwi gvY cwb†Z 6g BDwi qvi `ē†Yi er®úPv†ci Av†civ¶K nvmKi†Yi gvb KZ?]

- (A) 0.02 (B) 0.04 (C) 0.06 (D) 0.03

108 | Carbon black is obtained by the decomposition of— [wb†Pi †KvbWU fv½†j Kve® e†K cvl qv hvq¶N]

- (A) Acetylene (A`vmmUvBwj b) (B) Benzene (tebwRb)
(C) Carbon tetrachloride (Kve® †UJ†Kwi vBW) (D) Methane (wg†_b)

Read the following passage and answer the question numbers 109 and 110:

Eve teasing is a euphemism used in India, Pakistan and Bangladesh for public sexual harassment, street harassment or molestation of women by men, with Eve being a reference to the biblical Eve. Considered a problem related to delinquency in youth it is a form of sexual aggression that ranges in severity from sexually suggestive remarks, brushing in public places, catcalls, to outright groping. Eve-teasing has been a notoriously difficult crime to prove, as perpetrators often devise ingenious ways to attack women, even though often it is considered as "little rapes", and usually occur in public places, streets, and public transport.

Eve teasing in Bangladesh has taken such a heavy toll on the country's women that the education ministry there has voted to have an "Eve Teasing Protection Day". The announcement was made after the increasing concern over the worrying number of girls and women who have recently committed suicide in the country to escape eve teasing.

According to figures, released by the Ain-O-Shalish Kendra (ASK) human rights organisation, 14 girls and women have taken their own lives over the past four months across the country as a direct result of the insults [reported on June]. In addition, a father and a daughter also committed suicide together - in an incident blamed by the authorities on "eve teasing". In fact, police say three men who publicly protested against the harassment have been killed over the past 12 weeks. Critics argue that laws, which should prohibit sexual harassment, are so poorly drafted that victims get virtually no help from the law enforcement agencies. Families of the victims are left feeling hopeless and helpless. The situation is very frightening. If it is not controlled, we women can no longer live in society with any dignity. The situation leads to an increased drop-out rate of female students in many schools, and underage marriages.

109 | What will be the most suitable title for the above passage?

- (A) Ain-O-shalish Kendra (B) Women
(C) Eve Teasing (D) Adam and Eve

110 | Why victims feel helpless?

- (A) getting no aid of law-enforcement agencies
(B) laws are not strict

(C) criminals do not get proper punishment

(D) all above is correct

For questions 111-114, fill in the gaps with the correct forms of the verbs given in the bracket:

111| The sun _____ (rise) in the east.

(A) rise (B) rose (C) raises (D) rises

112| Friendship is a feeling of goodwill and love that _____ (exist) between two persons.

(A) existing (B) existed (C) exists (D) exist

113| Do not make him _____ (throw) you out.

(A) to throw (B) throwing (C) throw (D) throws

114| He _____ (lie) to me, but I could understand.

(A) laid (B) lay (C) lied (D) none

For question numbers 115-120 fill in the blanks with an appropriate idiomatic expression:

115| His presentation was full of _____.

(A) cold shoulder (B) black and blue
(C) chalk and cheese (D) jog trot

116| Which one of the following phrases is completely different in terms of expression?

(A) skin and bone (B) Pros and cons
(C) Ins and outs (D) Hows and whats

117| A judge must not have _____.

(A) a household word (B) better half
(C) kith and kin (D) a jaundiced eye

118| The book is now _____.

(A) out of wood (B) out of print
(C) out of touch (D) out of temper

119| We have to ___ a decision soon.

(A) come after (B) come at (C) come to (D) come across

120| The fair now _____ lots of people.

(A) adds to (B) teems with
(C) turns a deaf ear to (D) looks after

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