

PREVIEW QUESTION BANK

Module Name : Group C Mathematics-E
Exam Date : 04-Sep-2021 Batch : 10:00-11:30

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Case Study from Question No. 2 to Question No. 4				
1	1	Direction: Read the following passage and answer the questions. Organized retail has fuelled new growth categories-like liquid hand wash, breakfast cereals and pet food in the consumer goods industry, accounting for almost 50% of their sales, said data from market search firm Nielsen. The figures showed some of these new categories got more than 40% of their business from modern retail outlets. The data also suggests how products in these categories reach the neighbourhood Kirana stores after they have established themselves in modern trade. While grocers continue to be an important channel, for the new and evolving categories we saw an increased presence of high-end products in modern trade e.g., premium products in laundry detergents, dishwashing, car air fresheners and surface care increased in availability through this format as these products are aimed at affluent consumers who are more likely to shop in supermarket/hypermarket outlets and who are willing to pay more for specialized products. Some other categories that have grown exceptionally and now account for bulk of the sales from modern retail are frozen and ready-to-eat foods, pet food, diapers, pre-and post-wash products, hair conditioners and high-end shaving products, besides others. “Win the evaluation of modern trade, our growth in this channel has been healthy as it is for several other categories. Modern retail is an important part of our business” said managing director, Kellogg India. What modern retail offers to companies experimenting with new categories is the chance to educate customers which was not the case with a general trade store. “Category creation and market development starts with modern trade but as more consumers start consuming this category, they penetrate into other channels, said President, food and FMCG category, Future Group the country’s largest retailer which operates stores like Big Bazaar. But a point to note here is that modern retailers themselves push their own private brands in these very categories and can emerge as a big threat for the consumer goods and food companies. For instance, Big Bazar’s private label Clean Mate is highly popular and sells more than a brand like Harpic in its own stores. “So, there is a certain amount of conflict and competition that will play out over the next few years which the FMCG companies will have to watch out for”, said KMPG’s executive director (retail).	9.0	3.00
2	2	Which of the following best conveys the meaning of the phrase ‘Watch out for’ as used in the passage? A1 : Demand Justice A2 : Be on the alert A3 : Avoid conflict A4 : Passively accept	3.0	1.00
3	3	The new growth category products – A1 : Reach first the Kirana store and then the modern retail outlets. A2 : Account for less than 20% of sales in organised retail A3 : Reach all outlets at the same time A4 : First become popular with the modern outlets before reaching Kirana shops.	3.0	1.00
4	4	Which, as per the passage, are the categories that have become popular through sales from modern retail outlets? A1 : Frozen foods A2 : Cell phones A3 : Computers	3.0	1.00

		A4 : Fresh Fruits		
Case Study from Question No. 6 to Question No. 7				
5	5	Direction: In these questions, out of the four alternatives, choose the word which can be substituted for the given sentence.	6.0	2.00
6	6	Soldiers who fight on horseback A1 : Infantry A2 : Cavalry A3 : Artillery A4 : Armoured	3.0	1.00
7	7	A person who is popular in unfavourable way A1 : Conspicuous A2 : Notorious A3 : Obscure A4 : Ethical	3.0	1.00
Case Study from Question No. 9 to Question No. 10				
8	8	Direction: In these questions a part of the sentence has errors and the other parts have none. Find out which part has error.	6.0	2.00
9	9	Reading newspapers will / help you / in understand banking / and business concepts. (1) (2) (3) (4) A1 : Reading newspapers will A2 : help you A3 : in understand banking A4 : and business concepts	3.0	1.00
10	10	We have spent / most of the profits / that we earn / last year on purchasing new computers. (1) (2) (3) (4) A1 : We have spent A2 : most of the profits A3 : that we earn A4 : last year on purchasing new computers	3.0	1.00

Case Study from Question No. 12 to Question No. 13

11	11	Direction: Out of the four alternatives, choose the word opposite in meaning to the given word.	6.0	2.00
12	12	TRANSPARENT A1 : Translucent A2 : Vague A3 : Blind A4 : Opaque	3.0	1.00
13	13	OPPORTUNITY A1 : Proper time A2 : Destiny A3 : High Time A4 : Unfortunate	3.0	1.00

Case Study from Question No. 15 to Question No. 16

14	14	Direction: Choose the correct meaning of idioms, given underlined in the sentences.	6.0	2.00
15	15	He <u>made his pile</u> during the war. A1 : made a fortune A2 : collected decorative pieces A3 : laid foundation of business A4 : acted as enemy agent	3.0	1.00
16	16	He <u>took up cudgels</u> for his friend and silenced the critics. A1 : Discussed the problem A2 : Answered all Questions A3 : Took up defence A4 : Accepted responsibility	3.0	1.00

Case Study from Question No. 18 to Question No. 19

17	17	Direction: In these questions, choose the correct tense in the given sentence.	6.0	2.00
18	18	The sentence “ I am writing articles on corona disaster.” , has a A1 : Present perfect tense	3.0	1.00

		A2 : Present continuous tense A3 : Simple present tense A4 : Simple past tense		
19	19	The sentence” I had lived in Africa, before I moved to Paris.” , has a A1 : Present perfect tense A2 : Past perfect tense A3 : Simple present tense A4 : Simple past tense	3.0	1.00
Case Study from Question No. 21 to Question No. 22				
20	20	Direction: In the following questions, a given word is followed by four words. Select the word that is most similar in meaning.	6.0	2.00
21	21	CONVALESCENCE A1 : Continued hostile attitude A2 : Gradual recovery of health A3 : An assemblage of people A4 : Summary	3.0	1.00
22	22	CAJOLE A1 : To scorn A2 : To coax A3 : To scold A4 : To ridicule	3.0	1.00
Objective Question				
23	23	A man sits on a chair supported by a rope passing over a frictionless pulley. The man who weighs 1000 N exerts a force of 450 N on the chair downwards while pulling the rope on the other side. If the chair weighs 250 N, then tension in the rope is ($g = 10 \text{ m/s}^2$) A1 : 550 N A2 : 700 N A3 : 750 N A4 : 1250 N	3.0	1.00

Objective Question			
24	24	A uniform chain of length l is placed on a rough table, with length l/n, where $n > 1$, hanging over the edge. If the chain just begins to slide off the table by itself from this position, the coefficient of friction between the chain and the table is A1 : $1/(n - 1)$ A2 : $1/n$ A3 : $1/(n + 1)$ A4 : $(n + 1)/(n - 1)$	3.0 1.00
Objective Question			
25	25	A body X with a momentum p collides with another identical stationary body Y one dimensionally. During the collision Y gives an impulse J to body X. Then, the coefficient of restitution is A1 : $\frac{2J}{p} - 1$ A2 : $\frac{J}{p} + 1$ A3 : $\frac{J}{p} - 1$ A4 : $\frac{J}{2p} - 1$	3.0 1.00
Objective Question			
26	26	5 g of ice at 0°C is mixed with 5 g steam at 100°C. The final temperature is A1 : 0°C A2 : 100°C A3 : 50°C A4 : 20°C	3.0 1.00
Objective Question			
27	27	Four rods of same metal but different radii r and length l are used to connect two reservoirs of heat at different temperatures. Which one will conduct most heat? A1 : $r = 1 \text{ cm}, l = 1 \text{ m}$ A2 : $r = 2 \text{ cm}, l = 2 \text{ m}$ A3 : $r = 1 \text{ cm}, l = 0.5 \text{ m}$ A4 : $r = 2 \text{ cm}, l = 0.5 \text{ m}$	3.0 1.00

Objective Question				
28	28	A half ring of radius R has a charge of λ per unit length. The potential at the centre of the half ring is A1 : $\frac{k\lambda}{R}$ A2 : $\frac{k\lambda}{\pi R}$ A3 : $\frac{k\pi\lambda}{R}$ A4 : $k\pi\lambda$ ($k = \frac{1}{4\pi\epsilon_0}$)	3.0	1.00
Objective Question				
29	29	ABCD is a rectangle whose side AB = 10 cm and side BC = 24 cm. A charge of $0.104 \mu\text{C}$ is lying at the centre O of the rectangle. If the mid-point of side BC is E, then work done in carrying $100 \mu\text{C}$ charge from B to E will be A1 : 4.152 J A2 : 2.304 J A3 : 1.304 J A4 : 1.152 J	3.0	1.00
Objective Question				
30	30	A and B are two points on a uniform ring of resistance R. The angle ACB is θ, where C is the centre of the ring. The equivalent resistance between A and B is A1 : $\frac{R}{4\pi^2} (2\pi - \theta)\theta$ A2 : $\frac{R}{2\pi} (2\pi - \theta)$ A3 : $\frac{R}{2\pi} \theta$ A4 : $\frac{R}{4\pi} (2\pi - \theta)$	3.0	1.00
Objective Question				
31	31	A rheostat differs from potentiometer in the respect that A1 : rheostat has large number of turns A2 : rheostat offers larger number of tapings A3 : rheostat has lower wattage rating	3.0	1.00

		A4 : rheostat has higher wattage rating		
Objective Question				
32	32	A short bar magnet of length 4 cm has a magnetic moment of 4 J/T. What is the magnitude of the magnetic field at a distance 2 m from the centre of the magnet on its axial line? A1 : 10^{-4} T A2 : 10^{-5} T A3 : 10^{-6} T A4 : 10^{-7} T	3.0	1.00
Objective Question				
33	33	The amplitude of electric field in a parallel light beam of intensity 2.124 W/m^2 is A1 : 40 N/C A2 : 30 N/C A3 : 20 N/C A4 : 10 N/C	3.0	1.00
Objective Question				
34	34	The length of a wire required to manufacture a solenoid of length l and self inductance L is (cross sectional area is negligible) A1 : $\sqrt{\frac{2\pi Ll}{\mu_0}}$ A2 : $\sqrt{\frac{\mu_0 Ll}{4\pi}}$ A3 : $\sqrt{\frac{4\pi Ll}{\mu_0}}$ A4 : $\sqrt{\frac{\mu_0 Ll}{2\pi}}$	3.0	1.00
Objective Question				
35	35	A thin prism P1 of angle 4° , and made from a glass of refractive index 1.54, is combined with another thin prism P2 made from a glass of refractive index 1.72, to produce dispersion without deviation. The angle of P2 is A1 : 5.33° A2 : 4° A3 : 3° A4 : 2.6°	3.0	1.00

Objective Question				
36	36	Sunlight filtering through a tree often makes circular patches on the ground because of A1 : the space through which light penetrates is round. A2 : the scattering A3 : the diffraction A4 : the interference	3.0	1.00
Objective Question				
37	37	When a monochromatic source of light is at a distance of 0.2 m from a photo electric cell, cut off voltage and the saturation current are respectively 0.6 V and 18.0 mA. If same source is placed 0.6 m away from the photo electric cell, then A1 : the saturation current will be 54 mA A2 : stopping potential will be 0.6 V A3 : stopping potential will be 0.2 V A4 : the saturation current will be 18 mA.	3.0	1.00
Objective Question				
38	38	The air in Millikan oil drop method present between the electrodes is oxidized by A1 : chromatography A2 : gamma rays A3 : X-rays A4 : infrared waves	3.0	1.00
Objective Question				
39	39	In a thermonuclear reaction ${}_1\text{H}^2 + {}_1\text{H}^2 + {}_1\text{H}^2 \rightarrow {}_2\text{He}^4 + {}_1\text{H}^1 + {}_0\text{n}^1 + 21.6 \text{ MeV}$ The percentage of mass converted into energy is A1 : 0.13 % A2 : 0.39 % A3 : 0.78 % A4 : 1.56 %	3.0	1.00
Objective Question				
40	40	Two nucleons are at a separation of 1 fm. The net force between them is F1 if both are neutrons, F2 if both are protons and F3 if one is a proton and the other is a neutron. Then A1 : $F1 > F2 > F3$	3.0	1.00

		A2 : $F_2 > F_1 > F_3$ A3 : $F_1 = F_2 > F_3$ A4 : $F_1 = F_3 > F_2$		
Objective Question				
41	41	A load resistor of $2\text{ k}\Omega$ is connected in the collector branch of a common - emitter amplifier. Given $\beta = 50$ and input resistance of the transistor = $500\ \Omega$. If the input current is changed by $50\ \mu\text{A}$, then the power gain will be A1 : 10000 A2 : 1000 A3 : 100 A4 : 10	3.0	1.00
Objective Question				
42	42	According to Absorptive laws of Boolean algebra, expression ($A + AB$) equals A1 : A A2 : B A3 : AB A4 : $\bar{A}\bar{B}$	3.0	1.00
Objective Question				
43	43	Out of molarity (M), molality (m), formality (F) and mole fraction (x), those independent of temperature are A1 : M, m A2 : F, x A3 : m, x A4 : M, x	3.0	1.00
Objective Question				
44	44	If pressure of a gas contained in a closed vessel is increased by 0.4% when heated by 1°C, its initial temperature must be A1 : 250 K A2 : 250°C A3 : 2500 K A4 : 25°C	3.0	1.00
Objective Question				

45	45	The average velocity of an ideal gas molecule at 27°C is 0.3 m/s. The average velocity at 927°C will be A1 : 0.6 m/s A2 : 0.3 m/s A3 : 0.15 m/s A4 : 1.2 m/s	3.0	1.00
Objective Question				
46	46	Number of sigma bonds in P_4O_{10} is A1 : 6 A2 : 12 A3 : 16 A4 : 17	3.0	1.00
Objective Question				
47	47	Enthalpy of neutralisation of HCl with NaOH is x. The heat evolved when 500 ml of 2N HCl is mixed with 250 ml of 4N NaOH will be A1 : 500x A2 : 100x A3 : 10x A4 : x	3.0	1.00
Objective Question				
48	48	Calculate the OH^- ion concentration of NaOH of which pH is 12. A1 : 10^{-2} A2 : 10^{-7} A3 : 10^{-10} A4 : 10^{-12}	3.0	1.00
Objective Question				
49	49	The oxidation number of C in HCN and HNC respectively are A1 : +2, +2 A2 : +2, +4 A3 : +4, +4	3.0	1.00

		A4 : -2, -2		
Objective Question				
50	50	Which of the following has the highest ionic conductivity in solution? A1 : Rb^+ A2 : K^+ A3 : Li^+ A4 : Na^+	3.0	1.00
Objective Question				
51	51	A large difference between the fourth and fifth ionization energies indicates the presence of A1 : 4 valence electrons in an atom A2 : 5 valence electrons in an atom A3 : 6 valence electrons in an atom A4 : 8 valence electrons in an atom	3.0	1.00
Objective Question				
52	52	Calamine is an ore of A1 : Magnesium A2 : Calcium A3 : Lead A4 : Zinc	3.0	1.00
Objective Question				
53	53	Water softening by Clarke's process uses A1 : Calcium bicarbonate A2 : Sodium bicarbonate A3 : Potash alum A4 : Calcium hydroxide	3.0	1.00
Objective Question				
54	54	Which of the following characters about alkali metals is not correct? A1 : Their atomic radii and ionic radii increase down the group.	3.0	1.00

		A2 : Their density is low. A3 : Their melting and boiling points are high. A4 : They have highly electropositive nature.		
Objective Question				
55	55	Which of the following statement about the structure of diborane is not correct? A1 : There are two bridging hydrogen atoms in diborane. A2 : Each boron atom forms four bonds in diborane. A3 : The hydrogen atoms are not in the same plane in diborane. A4 : All B – H bonds in diborane are similar.	3.0	1.00
Objective Question				
56	56	The correct sequence of decrease in the bond angle of following hydrides is A1 : $\text{NH}_3 > \text{AsH}_3 > \text{PH}_3 > \text{SbH}_3$ A2 : $\text{NH}_3 > \text{PH}_3 > \text{AsH}_3 > \text{SbH}_3$ A3 : $\text{SbH}_3 > \text{AsH}_3 > \text{PH}_3 > \text{NH}_3$ A4 : $\text{PH}_3 > \text{NH}_3 > \text{AsH}_3 > \text{SbH}_3$	3.0	1.00
Objective Question				
57	57	The co-ordination number of Fe in $\text{K}_4[\text{Fe}(\text{CN})_6]$ is A1 : 3 A2 : 4 A3 : 6 A4 : 10	3.0	1.00
Objective Question				
58	58	Which of the following pollutants can cause blue baby syndrome? A1 : Sulphate A2 : Fluoride A3 : Nitrate A4 : Lead	3.0	1.00
Objective Question				
59	59	The IUPAC name of $\text{CH}_3\text{CH}=\text{CH}-\text{C}\equiv\text{CH}$ is	3.0	1.00

		A1 : 1 – pentyn - 3 – ene A2 : 3 – penten - 1 - yne A3 : 2 – penten - 4 - yne A4 : 4 – pentyn - 2 - ene		
Objective Question				
60	60	Meso tartaric acid and d – tartaric acid are A1 : Position isomers A2 : Racemic mixture A3 : Enantiomers A4 : Diastereomers	3.0	1.00
Objective Question				
61	61	Calcium carbide reacts with water to produce A1 : Ethane A2 : Methane A3 : Ethylene A4 : Acetylene	3.0	1.00
Objective Question				
62	62	Which of the following organic reactions takes place by carbene mechanism? A1 : Friedel – Craft reaction A2 : Peroxide effect A3 : Reimer – Tieman reaction A4 : Borodine Hunsdiecker reaction	3.0	1.00
Objective Question				
63	63	If $A = \{1, 2, 3\}$, $B = \{4, 5, 6\}$, then which of the following is not a relation from A to B? A1 : $R_1 = \{(1, 4), (1, 5), (1, 6)\}$ A2 : $R_2 = \{(1, 5), (2, 4), (3, 6)\}$ A3 : $R_3 = \{(1, 4), (1, 5), (3, 6), (2, 6), (3, 4)\}$ A4 : $R_4 = \{(4, 2), (2, 6), (5, 1), (2, 4)\}$	3.0	1.00

Objective Question				
64	64	For all complex numbers Z_1, Z_2 satisfying $Z_1 = 12$ and $Z_2 - 3 - 4i = 5$, the minimum value of $Z_1 - Z_2$ is A1 : 0 A2 : 2 A3 : 5 A4 : 7	3.0	1.00
Objective Question				
65	65	At an election there are five candidates and three members are to be elected. A voter may vote for any number of candidates not greater than the number to be elected. The number of ways in which the person can vote is A1 : 5 A2 : 15 A3 : 20 A4 : 25	3.0	1.00
Objective Question				
66	66	The largest term in the expansion of $(3 + 2x)^{50}$, where $x = 1/5$ is A1 : 5th A2 : 6th A3 : 8th A4 : 9th	3.0	1.00
Objective Question				
67	67	A box contains 10 mangoes out of which 4 are rotten. 2 mangoes are taken out together. If one of them is found to be good, the probability that the other is also good is A1 : 1/3 A2 : 8/15 A3 : 5/13 A4 : 2/3	3.0	1.00
Objective Question				
68	68	If two vertices of a triangle are (-2, 3) and (5, -1), orthocentre lies at the origin and centroid on the line $x + y = 7$, then the third vertex lies at A1 : (64/11, 112/11)	3.0	1.00

		A2 : (36/11, 140/11) A3 : (10, 6) A4 : (4, 12)		
Objective Question				
69	69	If a chord of the circle $x^2 + y^2 - 4x - 2y - c = 0$ is trisected at the point (1/3, 1/3) and (8/3, 8/3), then the value of c is A1 : 20 A2 : 25 A3 : 30 A4 : 40	3.0	1.00
Objective Question				
70	70	A straight line touches the hyperbola $9x^2 - 9y^2 = 8$ and the parabola $y^2 = 32x$. An equation of the line is A1 : $9x \pm 3y - 8 = 0$ A2 : $9x \pm 3y + 8 = 0$ A3 : $3x \pm 9y - 8 = 0$ A4 : $3x \pm 9y + 8 = 0$	3.0	1.00
Objective Question				
71	71	The equation of a directrix of the ellipse $\frac{x^2}{16} + \frac{y^2}{25} = 1$ is A1 : $3x = \pm 25$ A2 : $3y = \pm 25$ A3 : $y = \pm 3$ A4 : $x = \pm 3$	3.0	1.00
Objective Question				
72	72	The number of values of $m \in \mathbb{N}$ for which $y = e^{mx}$ is a solution of the differential equation $\frac{d^3 y}{dx^3} - 3 \frac{d^2 y}{dx^2} - 4 \frac{dy}{dx} + 12y = 0$ is A1 : 0 A2 : 1 A3 : 2 A4 : More than 2	3.0	1.00

Objective Question				
73	73	The period of function $\sin x + \cos x$ is A1 : 2π A2 : $3\pi/2$ A3 : π A4 : $\pi/2$	3.0	1.00
Objective Question				
74	74	The inverse of the function $f(x) = \frac{1-x}{1+x}$ is A1 : $\frac{1+x}{1-x}$ A2 : $\frac{1-x}{1+x}$ A3 : $\frac{x}{1+x}$ A4 : $\frac{x}{1-x}$	3.0	1.00
Objective Question				
75	75	If $x^m y^n = (x + y)^{m+n}$, then dy/dx is equal to A1 : xy A2 : $x + y$ A3 : y/x A4 : x/y	3.0	1.00
Objective Question				
76	76	The length of the longest interval, in which the function $3 \sin x - 4 \sin^3 x$ is increasing, is A1 : $\pi/3$ A2 : $\pi/2$ A3 : $3\pi/2$ A4 : π	3.0	1.00
Objective Question				
77	77	$\int \frac{(\cos 2x - \cos 2\theta) dx}{\cos x - \cos \theta}$ is equal to	3.0	1.00

		A1 : $2(\sin x + x \cos \theta) + C$ A2 : $2(\sin x - x \cos \theta) + C$ A3 : $2(\sin x + 2x \cos \theta) + C$ A4 : $2(\sin x - 2x \cos \theta) + C$		
Objective Question				
78	78	The area bounded by the curves $y = xe^x$, $y = xe^{-x}$ and the line $x = 1$ is A1 : $\frac{2}{e}$ A2 : $1 - \frac{2}{e}$ A3 : $\frac{1}{e}$ A4 : $1 - \frac{1}{e}$	3.0	1.00
Objective Question				
79	79	If x and y are the solutions of the equation $12 \sin x + 5 \cos x = 2y^2 - 8y + 21$, the value of $\cot(xy/2)$ is A1 : 7/12 A2 : 5/12 A3 : 1/2 A4 : 3/4	3.0	1.00
Objective Question				
80	80	If $\sin \alpha + \sin \beta = 3/5$ and $\cos \alpha + \cos \beta = 4/5$, then the value of $\sin(\alpha + \beta)$ is A1 : 24/25 A2 : 13/25 A3 : 12/13 A4 : 7/25	3.0	1.00
Objective Question				
81	81	If $4 \sin^{-1} x + \cos^{-1} x = \pi$, then x is equal to A1 : -0.5 A2 : 0 A3 : 1	3.0	1.00

		A4 : 1/2		
Objective Question				
82	82	If mean deviation is 12, then the value of standard deviation is A1 : 9 A2 : 12 A3 : 15 A4 : 18	3.0	1.00