



Madras School of Economics
(Recognized as *Institute of Special Importance* by the Government of TN)
(Included by UGC in the list of Institutions established under State Legislature Act)

Admission to M.A. Programs: Academic Year 2021-22

MADRAS SCHOOL OF ECONOMICS M.A. ENTRANCE TEST – MSEET-2021

INFORMATION HANDOUT

This handout contains details pertaining to various aspects of the exam you are going to undertake and important instructions about related matters. You are advised to study the handout carefully as it will help you in preparing for the examination.

The candidates must make sure that they fulfil all eligibility criteria – MSE reserves the right to reject the application if a candidate does not satisfy eligibility criteria.

The examination will comprise the following objective type multiple choice tests as stated below :

Sr. No.	Section / Stream	No. of Qs.	Max. Marks	Version	Test Duration
PART A (Compulsory)					120 minutes (2 hours)
1	Basic Mathematics and Statistics	15	15	Only English	
2	Analytical Skills	10	10		
PART B *					
Mathematics / Statistics Stream					
1	Advanced Mathematics	30	30	Only English	
2	Statistics	20	20		
Economics Stream					
1	Microeconomics	15	15	Only English	
2	Macroeconomics	15	15		
3	Indian Economy and Related Topics	20	20		

*** Candidates have to choose any one Section/Stream i.e. Mathematics / Statistics OR Economics.**

The time for the test is 120 minutes; however you may have to be at the venue for approximately 180 minutes including the time required for logging in, collection of the call letters, going through the instructions etc. All questions will be made available in English only. All the questions will have multiple choices. Out of the four answers to a question only one will be the correct answer. **You have to select the most appropriate answer and 'mouse click' that alternative which you feel is appropriate/ correct. The alternative/ option that you have clicked on will be treated as your answer to that question. There will be penalty for wrong answers marked by you. 1/4th marks allotted to a question will be deducted for each wrong answer.**

Number of questions answered correctly by a candidate in the objective test is considered for arriving at the Corrected Score after applying penalty for wrong answers. Cut-off will be applied on Total corrected score.

Some sample questions are given below. Kindly note that these questions are for illustrative purposes only. There shall be questions other than those given here.

SAMPLE QUESTIONS

PART A

- Q.1.** A function whose derivative is a constant multiple of itself must be:
(1) quadratic (2) linear (3) logarithmic (4) exponential
- Q.2.** Find the third order derivative of $Y = 5X^3$:
(1) 30 (2) $15X^2$ (3) $30X$ (4) $5X^2$
- Q.3.** $A = \begin{bmatrix} 0 & 0 & 0 \\ 1 & 2 & 3 \\ 2 & 3 & 4 \end{bmatrix}$ $B = \begin{bmatrix} 1 & -2 \\ -1 & 0 \\ 2 & 1 \end{bmatrix}$ Find AB
(1) $\begin{bmatrix} 0 & 0 \\ 5 & 1 \\ 7 & 0 \end{bmatrix}$ (2) $\begin{bmatrix} 1 & -2 \\ 3 & -5 \\ 4 & 9 \end{bmatrix}$ (3) $\begin{bmatrix} 3 & -2 \\ 6 & -5 \\ 5 & -7 \end{bmatrix}$ (4) $\begin{bmatrix} 2 & -2 \\ 5 & 3 \\ 7 & 4 \end{bmatrix}$
- Q.4.** $\lim_{x \rightarrow 3} \frac{x-3}{3-x}$ is:
(1) -1 (2) 0 (3) 1 (4) 3
- Q.5.** The function, $y = 3x^2 - 14x + 5$ at $x = 4$ is:
(1) decreasing (2) increasing (3) stationary (4) none of the above
- Q.6.** Probability of sure event is
(1) 1 (2) 0 (3) -1 (4) None of the above
- Q.7.** A single letter is selected at random from the word PROBABILITY. The probability that it is a vowel is
(1) $3/11$ (2) $2/11$ (3) $4/11$ (4) 0
- Q.8.** If A and B are independent event, then $P(A \cap B)$ is
(1) $P(A)P(B)$ (2) $P(A) + P(B)$ (3) $P(A/B)$ (4) $P(B) - P(A)$
- Q.9.** Which expression gives the probability $P\left(\frac{1}{2} < X < 1\right)$ using $F(x)$, given $0 < x < 1$
(1) $P\left(\frac{1}{2} < X < 1\right) = F\left(\frac{1}{2}\right) - F(1)$ (2) $P\left(\frac{1}{2} < X < 1\right) = F(1) - F\left(\frac{1}{2}\right)$
(3) $P\left(\frac{1}{2} < X < 1\right) = F(1) + F\left(\frac{1}{2}\right)$ (4) $P\left(\frac{1}{2} < X < 1\right) = F(1) - F(0)$
- Q.10.** If a constant value 4 is subtracted from each observation of a set, the value of the variance is
(1) reduced by 4 (2) reduced by 16 (3) reduced by 2 (4) unaltered
- Q.11.** If among 200 students, 105 like pizza and 134 like burger, then the number of students who like only burger can possibly be
(1) 26 (2) 23 (3) 96 (4) 93
- Q.12.** If 10% of 'a' is b% of 200, $a/b = ?$
(1) 20 (2) $1/20$ (3) 10 (4) $1/10$
- Q.13.** The population of a colony of ants increases by 20% every day. If one Monday the population is 3000. On which day of the week is it 5184?
(1) Wednesday (2) Tuesday (3) Thursday (4) Friday

- Q.14.** There are 13 numbers having an average of 9. The largest and the smallest numbers are 26 and 8.5 respectively. Find the average of the remaining numbers
 (1) 7.5 (2) 8 (3) 8.5 (4) 7
- Q.15.** The average weight of the students of two classes A and B with 20 and 30 students are 40 kg and 50 kg, respectively. Find the average weight of the students in both the classes put together?
 (1) 50 Kg (2) 55 Kg (3) 35 Kg (4) 46 Kg

PART B

MATHEMATICS-STATISTICS STREAM

- Q.1.** Which of the following polynomials leaves a remainder when divided by $x+2$?
 (1) $r(x) = (x+2)^{12}$ (2) $p(x) = x^2 - 4$ (3) $s(x) = x^4 + 3x^2 + 1$ (4) $q(x) = -x^3 + 8x^2 + 3x - 34$
- Q.2.** The characteristic roots of the matrix $A = \begin{pmatrix} 6 & 6 \\ 6 & -3 \end{pmatrix}$ are:
 (1) Both positive (2) Both negative
 (3) One positive and one negative (4) None of the above
- Q.3.** At compound interest if a certain sum of money doubles in n years then the amount will be four fold in
 (1) $2n^2$ years (2) n^2 years (3) $4n$ years (4) $2n$ years
- Q.4.** If $f(x) = x^3 - x + 3$ and $g(x) = 3$, then $f(g(x)) - g(f(x))$ is equal to:
 (1) 24 (2) 0 (3) -24 (4) 3
- Q.5.** Let $f(x) = 2x^6 - x^4$. If n is the number of stationary points and m is the number of inflection points, then:
 (1) $n+m = 6$ (2) $n+m = 5$ (3) $n+m = 2$ (4) $n+m = 4$
- Q.6.** The function, $y = -2x_1^2 + 4x_1x_2 - 5x_2^2 + 2x_2x_3 - 3x_3^2 + 2x_1x_3$ is:
 (1) Positive definite (2) Negative semi-definite
 (3) Negative definite (4) Positive semi-definite
- Q.7.** If $f(x, y) = x^2 + y^2 - 4$. What are the level curves $f(x, y) = k$?
 (1) Hyperbolas for $k < -4$ (2) Parabolas
 (3) Straight lines (4) Circles for $k > -4$
- Q.8.** The integral $\int \frac{dx}{x\sqrt{1-x^3}}$ is equal to
 (1) $\frac{1}{3} \log \left| \frac{\sqrt{1-x^2} + 1}{\sqrt{1-x^2} - 1} \right| + C$ (2) $\frac{1}{3} \log \left| \frac{\sqrt{1-x^3} - 1}{\sqrt{1-x^3} + 1} \right| + C$
 (3) $\frac{2}{3} \log \left| \frac{1}{\sqrt{1-x^3}} \right| + C$ (4) $\frac{1}{3} \log |1-x^3| + C$
- Q.9.** Suppose that X is a random variable for which the MGF is as follows:
 $\psi(t) = e^{b^2t^2/2+at}$ for $-\infty < t < \infty$. Find the mean and the variance of X .
 (1) a and b^2 (2) a and b (3) $2a$ and b (4) a^2 and b

- Q.10.** If 2 balls are drawn one after another from a bag containing 3 whites and 5 black balls, what is the probability that
- The first ball is white and 2nd is black?
 - One ball is white and the other is black?
- (1) $15/56$; $30/56$ (2) $8/56$; $15/56$ (3) $15/56$; $15/56$ (4) none of these
- Q.11.** Let X be a continuous random variable with PDF: $f(x) = ax, 0 \leq x \leq 1$
 $= a, 1 \leq x \leq 2$
 $= -ax + 3a, 2 \leq x \leq 3$
 $= 0, \text{o.w.}$
- (a) Find a . (b) Compute $P(X \leq 1.5)$
- (1) $\frac{1}{2}$; $\frac{1}{2}$ (2) 1 ; $\frac{1}{2}$ (3) $\frac{1}{2}$, $1/3$ (4) none of these
- Q.12.** X is a continuous random variable with pdf $f(x) = 6x(1-x), 0 \leq x \leq 1$
Find b such that $P(X) < b = P(X) > b$
- (1) $\frac{1}{2}$ (2) 1.2 (3) $2/3$ (4) 1
- Q.13.** Which of the following statements about hypothesis testing is true?
- If the p -value is greater than the significance level, we fail to reject H_0
 - A Type II error is rejecting the null when it is actually true.
 - If the alternative hypothesis is that the population mean is greater than a specified value, then the test is a two-tailed test.
 - The significance level equals one minus the probability of a Type I error.
- Q.14.** A multiple-choice test has 30 questions. There are 4 choices for each question. A student who has not studied for the test decides to answer all the questions randomly by guessing the answer to each question. Which of the following probability distributions can be used to calculate the student's chance of getting at least 20 questions right?
- (1) Binomial distribution
 - (2) Poisson distribution
 - (3) Exponential distribution
 - (4) Uniform distribution
- Q.15.** The mean and standard deviation of a normal distribution are 66 and 6 respectively. The approximate range within which the middle 50% of the values would lie is
- (1) (62, 70) (2) (60, 72) (3) (63, 69) (4) (64, 68)

PART B

ECONOMICS STREAM

- Q.1.** Let the Cost function be $C = 100q^2$, where q is the output. Then the Average cost curve is:
- (1) U-shaped
 - (2) Horizontal to the output axis
 - (3) Downward sloping
 - (4) Rising
- Q.2.** The Utility function of the consumer is $U = (xy)^{0.5}$, the prices of x and y are 2 and 2 respectively. The income of the consumer is 30. What is the optimal bundle?
- (1) (10,0) (2) (0,15) (3) (0,20) (4) (7.5, 7.5)
- Q.3.** What happens to the equilibrium output in the market if the unit cost of production increases? Assume that there is only one firm in the market.
- (1) Decrease (2) Decrease and it may be zero also (3) Constant (4) Increase
- Q.4.** Cross price elasticity of demand is:
- (1) negative for complementary goods
 - (2) unitary for inferior goods
 - (3) negative for substitute goods
 - (4) positive for inferior goods

Q.5. Determine the Pure strategy Nash-Equilibrium from the following game:

		Player B	
		U	V
Player A	X	1, 2	5, 0
	Y	3, 4	6, 8

- (1) X, U (2) X, V (3) Y, U (4) Y, V

Q.6. The classical *Quantity Theory of Money* assumes that:

- (1) income is constant (2) velocity is constant
(3) prices are constant (4) the money supply is constant

Q.7. Stagflation occurs when prices _____ and output _____ .

- (1) fall; falls (2) fall; increases (3) rise; falls (4) rise; increases

Q.8. Under a fixed exchange rate regime

- (1) monetary policy is effective (2) monetary policy is ineffective
(3) both monetary and fiscal policy are effective (4) both are ineffective

Q.9. If nominal wages are rigid in the short run the aggregate supply curve would be

- (1) vertical (2) upward-sloping (3) flat (4) downward-sloping

Q.10. In macroeconomics, the negative relationship between inflation and unemployment is summarized by:

- (1) The Phillips curve (2) The Engle curve (3) The indifference curve (4) Okun's law

Q.11. India is the biggest producer as well as the largest consumer and importer of which of the following crops?

- (1) Wheat (2) Cotton (3) Sugarcane (4) Pulses

Q.12. What is crude Literacy rate?

- (1) Number of illiterate persons to total populations
(2) Number of graduate peoples to total population
(3) Number of literate persons to total population
(4) None of these

Q.13. The largest component of revenue expenditure in India is:

- (1) Pension (2) Interest payments (3) Education (4) Health

Q.14. The official estimate for poverty rate for India has been estimated using

- (1) Monthly per capita household consumption data
(2) Monthly per capita household income data
(3) Annual per capita national income data
(4) All the above

Q.15. According to census definition Main workers are those who had work for –

- (1) 150 days or more (2) six months or more (3) eight months or more (4) not less than 300 days

(A) Details of the On-line Examination Pattern

- (1) The examination will be conducted on-line i.e. on a computer.
- (2) All tests will be in English.
- (3) All the questions will have multiple choices. Out of the four answers to a question only one will be the correct answer. **The candidate has to select the most appropriate answer and 'mouse click' that alternative which he/ she feels is appropriate/ correct. The alternative/ option that is clicked on will be treated as the answer to that question. Answer to any question will be considered for final evaluation, only when candidates have submitted the answers by clicking on "Save & Next" or "Mark for Review & Next".**
- (4) The clock has been set at the server and the countdown timer at the top right corner of your screen will display the time remaining for you to complete the exam. When the clock runs out the exam ends by default - you are not required to end or submit your exam.
- (5) The Question Palette displayed on the right side of screen will show the status of each question using one of the following symbols:

 You have not visited the question yet.

 You have not answered the question

 You have answered the question

 You have NOT answered the question, but have marked the question for review.

 The question(s) "Answered and Marked for Review" will be considered for evaluation.

The Marked for Review status for a question simply indicates that you would like to look at that question again. *If a question is answered and Marked for Review, your answer for that question will be considered in the evaluation.*

- (6) To select a question to answer, you can do one of the following :
 - (a) Click on the question number on the question palette at the right of your screen to go to that numbered question directly. Note that using this option **does NOT save your answer** to the current question.
 - (b) Click on '**Save & Next**' to save answer to current question and to go to the next question in sequence.
 - (c) Click on '**Mark for Review and Next**' to save answer to current question, mark it for review, and to go to the next question in sequence.
- (7) To select your answer, click on one of the option buttons.
- (8) To change your answer, click another desired option button.
- (9) To save your answer, you **MUST** click on **Save & Next**.
- (10) To deselect a chosen answer, click on the chosen option again or click on the **Clear Response** button.
- (11) To mark a question for review click on **Mark for Review & Next**. *If an answer is selected for a question that is Marked for Review, the answer will be considered in the final evaluation.*
- (12) To change an answer to a question, first select the question and then click on the new answer option followed by a click on the **Save & Next** button.
- (13) **Questions that are saved or marked for review after answering will ONLY be considered for evaluation.**
- (14) Sections will be displayed on the top bar of the screen. Questions in a section can be viewed by clicking on the section name. The section you will view will be highlighted.
- (15) After clicking the **Save & Next** button on the last question for a section, you will automatically be taken to the first question of the next section.
- (16) You can move the mouse cursor over the section names to view the status of the questions for that section.
- (17) You can shuffle between sections and questions anytime during the examination as per your convenience.
- (18) The candidates are requested to follow the instructions of the "Test Administrator" carefully. If any candidate does not follow the instructions / rules, it would be treated as a case of misconduct/ adoption of unfair means and such a candidate would be liable for debarment from appearing for examinations for a period as decided by Organization.
- (19) The candidates may ask the Test Administrator about their doubts or questions only before the commencement of the test. No query shall be entertained after the commencement of the examination.
- (20) After the expiry of 120 minutes, the candidates will not be able to attempt any question or check their answers.

(21) **Please note :**

- (a) **Candidates will not be allowed to “finally submit” unless they have exhausted the actual test time.**
- (b) **Under no circumstances should a candidate click on any of the ‘keyboard keys’ once the exam starts as this will lock the exam.**

B] General Instructions:

- (1) Please note Date, Reporting time and Venue address of the examination given in the call letter.
- (2) You may visit the venue one day before the Online Examination to confirm the location so that you are able to report **on time** (as printed in the call letter) on the day of the examination. Late comers will not be allowed.
- (3) The call letter must be brought with you to the examination venue along with your recent passport size photograph duly pasted on it. (Preferably the same photograph as was as uploaded).
- (4) You must scrupulously follow the instructions of the Test Administrator and Organization Representative at the examination venue. If you violate the instructions you will be disqualified and will be asked to leave the examination venue.
- (5) No use of calculators (separate or with watch), books, note books or written notes, cell phones (with or without camera facility), or any other electronic device will be allowed during the examination.
- (6) Please bring this call letter with your recent photograph affixed thereon, photocopy of the ID proof stapled with call letter and same currently valid photo identity proof in original. - **THIS IS ESSENTIAL**. Please drop the call-letter along with photocopy of photo identity proof duly stapled together in the designated drop-box. Currently valid photo identity proof may be PAN Card/Passport/Permanent Driving Licence/Voter's Card/Bank Passbook with photograph/Photo Identity proof issued by a Gazetted Officer on official letterhead /Photo Identity proof issued by a People's Representative on official letterhead/Valid recent Identity Card issued by a recognised College/University/ Aadhar/E-Aadhar Card with a photograph/Employee ID/Bar Council Identity card with photograph. **Please Note - Ration Card and Learner's Driving Licence will NOT be accepted as valid ID proof.** Please note that your name as appearing on the call letter (provided by you during the process of registration) should exactly match the name as appearing on the photo identity proof. Female candidates who have changed first/last/ middle name post marriage must take special note of this. If there is any mismatch between the name indicated in the Call Letter and Photo Identity Proof you will not be allowed to appear for the exam. In case of candidates who have changed their name will be allowed only if they produce Gazette notifications/their marriage certification/affidavit.
- (7) Your responses (answers) will be analysed with other candidates to detect patterns of similarity of right and wrong answers. If in the analytical procedure adopted in this regard, it is inferred/concluded that the responses have been shared and scores obtained are not genuine/valid, your candidature may be cancelled. Any candidate who is found copying or receiving or giving assistance or engaging in any behaviour unbecoming of a candidate will not be considered for assessment. The Organization may take further action against such candidates as deemed fit by it.
- (8) You should bring with you a ball-point pen. Rough sheet will be provided which can be used for rough work or taking down the question number you would like to review at the end of the test before submitting your answers. After the test is over you **MUST** drop the rough sheet in the drop box along with the stapled call letter and photocopy of the ID proof.
- (9) The possibility of occurrences of some problem in the administration of the examination cannot be ruled out completely which may impact test delivery and/or result from being generated. In that event, every effort will be made to rectify such problem, which may include the conduct of another examination if considered necessary. Decision of the test conducting body in this regard shall be final. Candidates not willing to accept such change shall lose his/her candidature for this exam.
- (10) If the examination is held in more than one session, the scores across various sessions will be equated to adjust for slight differences in difficulty level of different test batteries used across sessions. More than one session are required if the nodes capacity is less or some technical disruption takes place at any centre or for any candidate.
- (11) Please note that a candidate is allowed to appear only once in the online examination. Multiple appearance in online examination will result in cancellation of candidature. In case more than one call letter has been generated, candidates are advised to appear only once on the date and at the time mentioned on the respective call letter. All other call letters are to be surrendered.
- (12) Anyone found to be disclosing, publishing, reproducing, transmitting, storing or facilitating transmission and storage of test contents in any form or any information therein in whole or part thereof or by any means verbal or written, electronic or mechanical or taking away the papers supplied in the examination hall or found to be in unauthorised possession of test content is likely to be prosecuted.
- (13) Instances for providing incorrect information and/or process violation by a candidate detected at any stage of the selection, process will lead to disqualification of the candidate from the selection process and he/she will not be allowed to appear in any recruitment process of the Organization in the future. If such instances go undetected

during the current selection process but are detected subsequently, such disqualification will take place with retrospective affect.

SOCIAL DISTANCING MODE CONDUCT OF EXAM RELATED INSTRUCTIONS

- 1 Candidate is required to report at the exam venue strictly as per the time slot mentioned in the admit card AND/OR informed via SMS/Mail on their registered mobile number/mail prior to exam date. It is expected that candidate strictly adhere to this time slot – as entry into the exam venue will be provided based upon the individual's time slot ONLY. Candidates should report atleast 15 minutes before the Reporting time indicated on the call Letter.
- 2 Mapping of 'Candidate Roll Number and the Lab Number' will NOT be displayed outside the exam venue, but the same will be intimated to the candidates individually at the time of entry of the candidate to the exam venue.
- 3 Items permitted into the venue for Candidates
Candidates will be permitted to carry only certain items with them into the venue.
 - a. Mask (WEARING A MASK is COMPULSORY)
 - b. Gloves
 - c. Personal transparent water bottle
 - d. Personal hand sanitizer (50 ml)
 - e. A simple pen
 - f. Exam related documents (Call Letter/Admit Card and Photocopy of the ID card stapled with it, ID Card in Original.)
 - g. Call Letter/Admit Card should be brought with the Photocopy of the Photo ID stapled with it. Original ID (same as Photocopy) is also to be brought for verification. The name on the ID and on the Call Letter/Admit Card should be exactly the same.
 - h. In case of Scribe Candidates - Scribe form duly filled and signed with Photograph affixed.No other Items are permitted inside the venue.
- 4 Candidate should not share any of their personal belonging/material with anyone
- 5 Candidate should maintain safe social distance with one another.
- 6 Candidate should stand in the row as per the instructions provided at venue.
- 7 If candidate is availing services of a scribe, then scribe also should bring their own Gloves, N95 Mask, sanitizer (50ml) and transparent water bottle. Wearing a mask is compulsory. Both candidate and Scribe will require to be wearing N95 Mask.
- 8 A Candidate must have AarogyaSetu App installed on his/her mobile phone. The AarogyaSetu status must show candidate's risk factor. A candidate will have to display this status to the Security Guard at the entry into the exam venue. In case a candidate does not have a smart phone, he/she will have to bring in a signed declaration to this effect (declaration is provided along with this Call Letter) and show the same to the Security Guard at the entry into the exam venue. Candidates with Moderate or High Risk Status on AarogyaSetu App will not be allowed entry. In case any of the responses in declaration suggest COVID 19 infection/symptoms, the candidate will not be permitted inside the exam venue. (If candidate is availing services of a Scribe, then Scribe should also follow the same instructions.)
- 9 After AarogyaSetu status display at the entry gate, candidates will be required to switch off their mobile phones, and deposit it at the designated location, to be collected while exiting
- 10 All candidates (and Scribe, if applicable) will be checked with Thermo guns at the entry point for temperature. In case, any person is observed to be having above normal temperature ($> 99.14^{\circ}\text{F}$) or displaying any symptoms of the virus, they will not be allowed entry into the venue.
- 11 In candidate registration :
 - a. Candidate registration will be done through photo capture.
 - b. Photograph will be taken while candidate is standing.
 - c. Seat number will be given to the candidate.
- 12 Rough sheet, call letter and ID proof management
 - Rough sheet(s) kept at each candidate desk will be used by candidate.
 - Candidate must follow the instructions related to dropping the call letter with the ID proof copy in the boxes provided at the exit of lab/venue while leaving or at the designated place. Those candidates who avail the services of Scribe should submit Scribe form also along with the Call Letter and ID proof copy
 - Candidate must drop the rough sheets, call letter, ID proof copy in the boxes provided at the exit of lab/venue while leaving or at the designated place indicated by Exam officials.
- 13 Post Examination Controls
 - On completion of examination, the candidates should move out in an orderly manner without crowding as instructed by the venue staff.

WISH YOU GOOD LUCK