Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, November 2019

First Degree Programme Under CBCSS

Complementary Course I for Statistics

MM 1131.4 : MATHEMATICS I – BASIC CALCULUS FOR STATISTICS

(2018 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

All the first **ten** questions are compulsory. They carry **1** mark each.

1. What is the first derivative of $\ln(a^x + a^{-x})$?

2. Find $\frac{dy}{dx}$ if $x^2 + y^2 = 100$.

3. Derivative of $f(x) = \ln\left(\frac{x}{1+x^2}\right)$ with respect to x is ————————.

4. Find all values of c in the interval $[3, 5]$ that satisfy the conclusion of the Rolle's theorem for the function $f(x) = x^2 - 8x + 15$.

5. $\left(\sum_{n=1}^{\infty}\frac{1}{n}\right) - 1 =$ ————————.

6. For what values of x, the power series $\sum_{n=0}^{\infty}\frac{x^n}{n!}$ converges.

P.T.O.

7. If R is the radius of convergence of a power series then the radius of convergence of its derived series is ————————.

8. Define absolute convergence.

9. $\int \ln x \, dx =$ ————————.

10. $\frac{d}{dx}\left[\int_1^x t^3 dt\right] =$ ————————.

SECTION – II

Answer any **eight** questions from among the questions 11 to 22. These questions carry **2** marks each.

11. Find the position and nature of the stationary points of the function $f(x) = 2x^3 - 3x^2 - 36x + 2$.

12. Using Leibnitz's theorem find the second derivative of $\cos x \sin 2x$.

13. Find the intervals on which the function $f(x) = x^2 - 5x + 6$ is increasing and decreasing.

14. Let $f(x) = \begin{cases} 3x^2 & x \leq 1 \\ ax + b & x > 1 \end{cases}$. Find the values of a and b so that f will be differentiable at $x = 1$.

15. Determine whether the series $\sum_{n=1}^{\infty} \frac{1}{(n!)^2}$ converges.

16. Discuss the convergence of the series $\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \ldots$ to ∞.

17. Investigate the convergence of the series $\sum_{n=1}^{\infty} \frac{(2n)!}{(n!)^2}$.

18. Discuss the convergence of the series $\sum_{n=1}^{\infty} \frac{n^2}{2^n}$.

19. Evaluate $\int_2^5 (2x - 5)(x - 3)^4 \, dx$.

20. At what point or points in the interval $[0, 1]$ does the function $f(x) = 3x^2 - 1$ assume its average values?

21. If the power series $P(x)$ converges for $x \in (a, b)$. Show that $\frac{d}{dx}P(x)$ and $\int P(x)dx$ converge for all $x \in (a, b)$.

22. Evaluate $\int_0^\infty \frac{xdx}{(x^2+a^2)^2}$.

SECTION – III

Answer any **six** questions from among the questions 23 to 31. These questions carry 4 marks each.

23. Let $f(x) = x^{2/3}$, $a = -1$, $b = 8$. Show that there is no point c in (a, b) such that $f'(c) = \frac{f(b)-f(a)}{b-a}$. Explain why the result does not contradict the Mean-Value theorem.

24. Find the radius of curvature at any point on the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$. What is the curvature when $b = a$?

25. Test whether the series $\sum_{n=1}^{\infty}\frac{\sin n}{n^2}$ is convergent or not.

26. Evaluate the sum $\sum_{n=1}^{N}\frac{1}{n(n+1)(n+2)}$.

27. Sum the series $S(\theta) = 1+\cos\theta+\frac{\cos 2\theta}{2!}+\frac{\cos 3\theta}{3!}+\ldots$

28. Find the values of x for which the power series $\sum_{n=1}^{\infty}(-1)^{n-1}\frac{x^{2n-1}}{2n-1}$ converges.

29. Using integration by parts, find a relationship between I_n and I_{n-1}, where $I_n \int_0^1 (1-x^3)^n dx$ and n is any positive integer. Hence evaluate $I_2 = \int_0^1 (1-x^3)^2 dx$

30. Find the total are between the curve $y = 1 - x^2$ and the x-axis over the interval $[0, 2]$.

31. Evaluate $\int_0^1 \tan^{-1} x \, dx$.

SECTION – IV

Answer any **two** questions from among the questions 32 to 35. **These** questions carry **15** marks each.

32. (a) Use the Mean-value theorem to prove that $\frac{x}{1+x^2} < \tan^{-1} x < x (x < 0)$.

(b) Find the volume of the solid generated by revolving the region bounded by $y = \sqrt{x}$ and the lines $y = 1$, $x = 4$ about the line $y = 1$.

33. (a) Find the length of the curve $y = \left(\frac{x}{2}\right)^{\frac{2}{3}}$ from $x = 0$ to $x = 2$.

(b) Find the Maclaurin series for $x \sin x$.

34. (a) Find the area of the surface generated by resolving the ellipse $\frac{x^2}{16} + \frac{y^2}{4} = 1$ about the x–axis.

(b) Find the volume of the solid generated when the region enclosed by $y = \sqrt{x}$, $y = 2$ and $x = 0$ is resolved about the y–axis.

35. (a) Find the Taylor series generated by $f(x) = \frac{1}{x-1}$ at $x = 2$. Where does the series converge to $f(x)$?

(b) Find the area of the surface generated by resolving the curve $y = x^3$, $0 \le x \le \frac{1}{2}$ about the x–axis.

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Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, November 2019

First Degree Programme under CBCSS

Complementary Course for Statistics

PY 1131.3 – MECHANICS AND PROPERTIES OF MATTER

(2018 Admission onwards)

Time : 3 Hours Max. Marks : 80

PART – A

(Answer **all** questions in one or two sentences. Each question carry **1** mark.)

1. Define radius of gyration.
2. When a metallic ball is compressed from the top and made into a disc, its moment of inertia increases. Why?
3. The oscillation of a spring is simple harmonic. Why?
4. How do you distinguish plane progressive wave and stationary wave?
5. What do you understand by the neutral surface of a loaded beam?
6. How bending moment is related Young's modulus of the material of a beam?
7. What do you understand by Viscosity?
8. Define critical velocity with regard to the flow of liquid.
9. What is the reason for capillary action of liquids?
10. What is meant by surface energy of liquid surface?

(10 × 1 = 10 Marks)

PART – B

(Answer **any eight** questions not exceeding a paragraph. Each question carries **2** marks.)

11. State theorem of perpendicular axes.

12. A circular disc and a circular ring of same mass and radius slide down an inclined plane, which one will reach the bottom first and why?

13. Obtain expression for the moment for inertia of a circular lamina or a disc about an axis passing through its center perpendicular to its plane.

14. Explain principle of superposition with regard to wave propagation in a medium.

15. Write the expression for the time period of a torsion pendulum. Give an application of torsion pendulum.

16. Explain the reason for the, I form of Girders?

17. What is meant by shearing strain?

18. What is the condition that the motion of a pendulum is simple harmonic and why?

19. What are the differences between a simple pendulum and a compound pendulum?

20. What is meant by angle of contact? How it is related to the shape of liquid meniscus?

21. Tiny drops of liquid are spherical while large drops have a flat surface at the top. Why?

22. Smaller air bubble will have a greater pressure inside, than a larger air bubble. Why?

(8 × 2 = 16 Marks)

PART – C

(Answer **any six** questions not exceeding a paragraph. Each question carries **4** marks.)

23. A circular disc of has a mass of 1 kg and radius 0.1 m is rotating at the rate of 10 revolution in a second about an axis right angle to its plane and passing through its center. Find the work done to double its speed of revolution.

24. A rod has a mass 1 kg. Find its moment of inertia about an axis passing through the center of mass and perpendicular to its length. Given that moment of inertia of the same rod about one end perpendicular to its length is 236 kg-m^2.

25. The equation of a transverse progressive simple harmonic wave is $y = 3\sin 2\pi\left(\frac{t}{0.04} - \frac{x}{40}\right)$ where length is expressed in cm and *t* in second. Calculate the wave length, amplitude and speed of the wave.

26. Calculate the energy radiated per unit volume in air by a plane wave of frequency 256 Hz and amplitude 1 micrometer. Density of air = 1.29 kg/m^3.

27. Calculate the work done in spraying a water drop of 1 mm radius into 1000 droplets of equal size. Given the surface tension of water to be 0.072 N-m.

28. What would be the excess pressure inside a small air bubble of 0.1mm radius situated in water? Surface tension of water is 0.072 N/m.

29. A light metal rod of length 50 cm and radius 1 cm is clamped at one end and loaded with 10 kg. at the free end. Calculate the depression at the free end. Take Young's modulus of the material to be 9×10^{10} N/m^2.

30. Calculate the velocity of efflux of water from the bottom of a reservoir in which the pressure is 1960 N/m^2, above the atmospheric pressure.

31. Water is flowing through a tube of 10 cm in diameter and 5 km in length at the rate of 120 liters per minute. Calculate the difference of pressure at the end of the tube to maintain the flow.

($6 \times 4 = 24$ Marks)

PART – D

(Answer **any two** questions not exceeding a paragraph. Each question carries **15** marks.)

32. Obtain the differential equation of a harmonic wave from the definition of SHM. Hence find the equation for velocity, acceleration and the displacement and energy of the particle executing SHM.

33. Describe an experiment to determine the moment of inertia of a Flywheel. Explain why the mass of a flywheel is concentrated at its rim?

34. Obtain the expression for the depression of a cantilever fixed at one end and loaded at the free end.

35. Derive Poiseuille's formula and explain experimental method of determination of the coefficient of viscosity based on Poiseuille's formula.

($2 \times 15 = 30$ Marks)

(Pages : 3) **H – 1996**

Reg. No. : .....

Name : .....

First Semester B.A. / B.Sc. Degree Examination, November 2019

First Degree Programme Under CBCSS

English Language

Foundation Course I

EN 1121 : WRITINGS ON CONTEMPORARY ISSUES

(2016 – 2018 Admission)

Time : 3 Hours Max. Marks : 80

I. Answer **all** questions, each in a word or a sentence.

1. What is NHRC?

2. What does the speaker mean when he says that "My mother bore me in the southern wild"?

3. What is ICCPR?

4. What did Nani do?

5. What is the significance of Patna conference resolution?

6. Who appears before the author in her dream like state in "The Goddess of Revenge."?

7. Define the terms globalisation and localisation.

P.T.O.

8. What does the term freedom imply for the thirsty people?

9. What is alcohol withdrawal delirium?

10. What are stimulants?

(10 × 1 = 10 Marks)

II. Answer **any eight** questions, each in short paragraph not exceeding **50** words.

11. Explain the association between economic disparity and human rights.

12. What is the theme of the poem "The Little Black Boy"?

13. Discuss the case of Roop Kanwar.

14. Examine the author's depiction of society in the story "The Goddess of Revenge."

15. How does the author describe the grandmother's reaction on hearing the name Nani?

16. Explain the effects of globalisation on India?

17. Describe author's views on the policy changes in the context of localisation.

18. Explain the symbolism in the act of stitching as depicted the poem "Freedom."

19. What are the basic patterns in the usage of psycho-active substances?

20. Discuss the association between alcohol and different mental health problems.

21. Why does the cup in the hand of the poet rattles like drum?

22. The tailor's idea of freedom.

(8 × 2 = 16 Marks)

III. Answer **any six** questions, each in a paragraph not exceeding **100** words.

23. Explain the impact of globalisation on human rights.

24. Examine the poet's depiction of Nani.

25. Discuss the association between poverty and human dignity.

26. Explain author's views on "the varying forms of violence confronted by different sections of women."

27. What are the views of Joseph E Stilgitz about pro-globalization policies?

28. What are the different treatment methods in alcoholism?

29. Examine the images and symbols used by Jeet Thayil to depict the life of an alcoholic.

30. Discuss the attrocities encountered by the underprivileged women.

31. Write a short note on the etiology of adolescent substance abuse?

(6 × 4 = 24 Marks)

IV. Answer **any two** of the following in not less than **300** words.

32. Examine Gail Omvedt's analysis of violence against women.

33. Examine the major themes portrayed in the poem "Nani."

34. Describe the process of localisation as discussed by Helena Norberg-Hodge.

35. Discuss N.R. Madhava Menon's views on human rights and dignity.

(2 × 15 = 30 Marks)

(Pages : 3) **H – 2010**

Reg. No. : .....

Name : .....

First Semester B.A./B.Sc. Degree Examination, November 2019

First Degree Programme under CBCSS

Malayalam Language

Language Course II – Additional Language I

ML 1111.1 : മലയാള കവിത

(2018 admission onwards)

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക.

1. ജരിതയുടെ ഭർത്താവ് ആര്?

2. 'ഗ്രാമവൃക്ഷത്തിലെ കുയിൽ' ആരുടെ രചനയാണ്?

3. 'ആരോമൽച്ചേകവരങ്കം പിടിച്ചിട്ടും' അരമുഴംപോലും പിൻവാങ്ങാത്തതെന്ത്?

4. ആദ്യത്തെ കർഷകരാജാവായി ശോഭിച്ചതാര്?

5. 'ഗോപികാദണ്ഡകം' എന്ന രചന ഏതു കവിതയോടുള്ള പ്രതികരണമാണ്?

6. ഒക്ടേവിയോ പാസിന്റെ 'സൺസ്റ്റോൺ' എന്ന കൃതി 'സൂര്യശില' എന്ന പേരിൽ വിവർത്തനം ചെയ്തതാര്?

7. ഇക്കുറി ആതിരയെ ഒരുമിച്ചു കൈകൾകോർത്ത് എതിരേല്ക്കണമെന്നു പറയാൻ കാരണമെന്ത്?

P.T.O.

8. 'അമ്പലമണി' രചിച്ചതാര്?

9. ഉണ്ണിയാർച്ച പിറന്ന വീടേത്?

10. 'ശക്തിയുടെ കവി' എന്ന വിശേഷണം നേടിയതാര്?

(10 × 1 = 10 Marks)

II. **ഒരു** ഖണ്ഡികയിൽ കവിയാതെ **എട്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

11. "എങ്ങാനും പൊയ്പ്പോൾകമ്മേ! നീകൂടെ മരിക്കേണ്ടാ" - ഇങ്ങനെ പറയാൻ കാരണമെന്ത്?

12. "ഭീതിവേണ്ട, തരികതെനിക്കു നീ" - പറഞ്ഞതാര്? സൂചിതമെന്ത്?

13. മനസ്വിനിയുടെ ചികുരഭരം വിലസിയത് എപ്രകാരമാണ്? കല്പനയുടെ ഭംഗി പരിശോധിക്കുക.

14. "സങ്കടം കാൺകിലും കാണാതെ പോകയോ
മംഗലേ നീയൊരു മങ്കയല്ലേ?" - പറഞ്ഞതാര്? കാരണമെന്ത്?

15. "ഒന്നിണ്ടു കേൾക്കണം അച്ഛനോട്" - ഉണ്ണിയാർച്ച ചോദിക്കുന്നതെന്ത് ?

16. വൃദ്ധന്റെ പ്രണയം ചാഞ്ഞു പെയ്യുന്ന മഴപോലെയാണെന്നു പറയുന്നതെന്തുകൊണ്ട്?

17. "മർദ്ദനമേറ്റു വലഞ്ഞോരെൻ ദൃഢ-
മസ്തകമിപ്പൊഴുമുയരുന്നു." - ആരുടെ? എന്തുകൊണ്ട്?

18. "അവിടെ നീ പോകേണ്ട, തവരുടെ മാർഗ്ഗമെന്നറിയൂ" - ഏവിടെ? സൂചിതമെന്ത്?

19. "എത്ര കൊഴുത്ത ചവർപ്പു കുടിച്ചു വറ്റിച്ചു നാം
ഇത്തിരി ശാന്തിതൻ ശർക്കര നുണയുവാൻ" - സൂചിതമെന്ത്?

20. "ആരന്ധകാരത്തെ സൃഷ്ടിച്ചവൻ, ദയാ-
വാരാശിയദ്ദേഹം വാഴ്ത്തപ്പെട്ടോൻ" - ഇങ്ങനെ സ്തുതിക്കാൻ കാരണമെന്ത്?

21. "അതിരുണ്ടവൾതൻ ക്ഷമയ്ക്കും" - ആരുടെ? സൂചിതമെന്ത്?

22. പാടത്തു കതിരിനു കനം വീഴുന്നതിനൊപ്പം കോമന്റെ വീട്ടിലുയർന്ന ആശകൾ ഏവ?

(8 × 2 = 16 Marks)

III. നൂറ്റിയിരുപതു വാക്കിൽ കവിയാതെ **ആറു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

23. ഒരു തൈ നടുമ്പോൾ കൂടെ നടുന്നത് എന്തൊക്കെയാണ്?

24. മൊബൈൽഫോണിനെ പ്രണയവുമായി ബന്ധിക്കുന്നതിന്റെ കാവ്യയുക്തി പരിശോധിക്കുക.

25. 'എലികൾ' എന്ന രചനയിൽ ഹാസ്യം ദുരന്താവിഷ്കാരത്തിനു കരുവാകുന്നതെങ്ങനെ?

26. കൃഷ്ണന്റെ ബാല്യം 'കുഞ്ഞേ, മുലപ്പാൽ കുടിക്കരുത്' എന്ന കവിതയുടെ ഭാവാന്തരീക്ഷത്തെ നിർണ്ണയിക്കുന്നതെങ്ങനെ?

27. ധർമ്മം, കർമ്മം എന്നിവയെക്കുറിച്ചുള്ള ധാരണകൾ 'ജരിതാവിലാപ'ത്തിലെ വൈകാരികമായ സന്ദർഭത്തിൽ പ്രവർത്തിക്കുന്നതെങ്ങനെ?

28. "അപ്രതിമഗുണാർദ്രമനസ്വിനി നീ" എന്നു പ്രിയതമയെ വാഴ്ത്തുന്നതിന്റെ കാരണങ്ങൾ ഏവ?

29. "ഒന്നല്ലെനിക്കുള്ളു പൊന്മകനും

അവനെ പഴുതെ നീ കൊല്ലിക്കല്ലേ" - അച്ഛൻ ഇങ്ങനെ പറയാൻ കാരണമെന്ത്?

30. "പാരിന്റെ ദാസിച്ചെറുമിയായ്പ്പോകയാൽ

സൂരജേ നീയെന്തുയർച്ച നേടി" - സൂചിതമെന്ത്?

31. 'നിനക്ക്' എന്ന കവിതയിലെ വാഗ്ദാനങ്ങളുടെ സവിശേഷത പരിശോധിക്കുക.

(6 × 4 = 24 Marks)

IV. **മൂന്നു** പുറത്തിൽ കവിയാതെ **രണ്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

32. "വൃദ്ധരതിയുടെ നിസ്സഹായതയെ വാത്സല്യരാശിയിലേക്കു വലിച്ചടുപ്പിക്കുന്ന അനുഭവമാണ് ചാഞ്ഞു പെയ്യുന്ന മഴയിലേത്" - പരിശോധിക്കുക.

33. 'സഫലമീയാത്ര' എന്ന കൃതാർത്ഥതയോടെ കവി ആതിരയെ എതിരേല്ക്കുന്നതിന്റെ ഭാവമേഖലകൾ വിശകലനം ചെയ്യുക.

34. "നാടകീയമായ ആഖ്യാനശൈലികൊണ്ടും പരിവർത്തനോത്സുകമായ പ്രമേയം കൊണ്ടും പ്രസക്തമാണ് ചണ്ഡാലഭിക്ഷുകി" - പാഠഭാഗത്തെ മുൻനിർത്തി പരിശോധിക്കുക.

35. 'പുത്തൻകലവും അരിവാളും' എന്ന കവിതയുടെ ചരിത്രപരവും സാമൂഹികവുമായ പ്രസക്തി പരിശോധിക്കുക.

(2 × 15 = 30 Marks)

Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, November 2019

First Degree Programme Under CBCSS

Statistics

Core Course I

ST 1141 : STATISTICAL METHODS – I

(2018 Admission onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. **Each** carries **1** mark.

1. Data taken from Agricultural Statistics in India will be considered as ———— data.
2. Define Cartograms.
3. Points of intersection of the two ogives corresponds to the ————————.
4. Data can be classified according to colour. They are measured on ———— ——— sale.
5. For a frequency distribution define r^{th} moment about A.
6. Classification based on time is called ————————.
7. Define G.M.
8. Define Coefficient of Variation.
9. State true or false : Variance is independent of change of origin and scale.
10. Find arithmetic mean of the numbers 2,4,6,7,9,10,17.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer any **eight** questions. **Each** carries **2** marks.

11. Explain the merits of Sampling over Census.

12. Define Kurtosis and suggest a measure for it.

13. What are the functions of Statistics?

14. 10 is the mean of a set of 7 observations and 5 is the mean of a set of 3 observations. Find the mean of the combined set.

15. Define pictogram. Explain with the help of an example.

16. Prove that for any discrete distribution, standard deviation is not less than mean deviation from mean.

17. Define histogram.

18. Give any four sources of secondary data.

19. Explain Sheppard's correction for moments.

20. List out any four Merits of Median.

21. Represent using appropriate diagram.

Student Name	A	B	C	D	E	F
Marks	72	66	35	76	29	50

22. In a moderately asymmetrical distribution Mean is 24.6 and median is 25.1 find the value of mode.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** carries **4** marks.

23. Calculate Mean deviation about Mean: 8,24,12,16,20,10.

24. What are the limitations of Statistics?

25. Explain ratio scale and nominal scale.

26. Formulate frequency table for the following data.

5, 15, 51, 12, 18,2,3,7, 19, 59, 47, 63, 82, 33, 31. 32, 67, 52, 45, 64.

27. Compute median.

Class	0-6	7-13	14-20	21-27	28-34	35-41
f	8	17	28	15	9	3

28. Compare primary and secondary data.

29. Explain the construction of a Pie diagram.

30. The first 4 raw moments of a distribution are 1, 4, 10 and 46. Find the first four central moments.

31. Draw a subdivided bar diagram for the following data.

Year	Arts	Science	Law
2012	1000	1500	750
2013	1300	1400	500
2014	1650	1230	738

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** carries **15** marks.

32. Find standard deviation and coefficient of variation for the following data.

Age:	0-6	6-12	12-18	18-24	24-30
No. of Patients	5	7	18	25	17

33. (a) Explain different types of classifications with examples.

(b) Define tabulation. Explain different types of tables.

34. Find Q1, Q3, D4, P20, and P99 for the following data

Mark	25	35	40	50	52	53	67	75	80
No. of students	3	29	32	41	49	54	38	29	27

35. Explain frequency polygon, and less than ogive. Construct them with the help of an example.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

First Semester B.A./B.Sc. Degree Examination, November 2019

First Degree Programme Under CBCSS

Foundation Course I

EN 1121 & CG 1121.3 : WRITINGS ON CONTEMPORARY ISSUES

(Common for B.A./B.Sc. English & Communicative English)

(2019 Admission)

Time : 3 Hours Max. Marks : 80

PART A

I. Answer **ALL** questions, each in a word or a sentence :

1. What is dopamine?

2. What does the Section 64 of NDPS act state?

3. What is UTM?

4. Define AI?

5. When was the term secularism first used?

6. What is MSD and RSI?

7. When did the General Assembly adopt the Universal Declaration of Human rights?

8. What does Adam Smith state about infanticide?

9. How did ageing in India increased exponentially?

10. Expand and define GNP. **(10 × 1 = 10 Marks)**

PART B

II. Attempt any **EIGHT** questions in not more than **50** words :

11. Explain the different causes for drug abuse, state in the prescribed essay.

12. Describe Alan Turing's contribution to artificial intelligence.

13. How does drug abuse affects the brain of the user?

14. What were the suggestions the author received regarding the steps to cure her disease?

15. Elucidate the different aspects of civil law.

16. Why is the author sceptical regarding the use of smart phone?

17. Explain the different economic and cultural rights.

18. Discuss the method of formulating the ratio of girls to boys in India.

19. What is Amartys Sen's views about the female-male ratio in different parts of India?

20. Explain the significance of infrastructure in old age care.

21. What does the author state about 'boy-preference'?

22. What was the effect of globalization on China? **(8 × 2 = 16 Marks)**

PART C

III. Attempt any **SIX** questions in around 100 words :

23. Describe Turing Test and its relevance in the context of artificial intelligence.

24. Discuss the different exercise that the author did to cure her rotator cuff tear.

25. Describe the formation of the Universal Declaration of Human Rights.

26. Discuss the transition of total fertility rate in Bangladesh.

27. Explain the impact of female education in women empowerment.

28. Discuss the initiatives of China and South Korea in women empowerment.

29. What are the economic factors that influence geriatric care in India?

30. Give a brief overview about the impact of privatisation.

31. What is the effect of globalization on health care? **(6 × 4 = 24 Marks)**

PART D

IV. Attempt any **TWO** questions in not less than 300 words :

32. Give an overview of Samudranil Mukherjee's views on drug abuse.

33. Discuss the concept of artificial intelligence as put forth by Gareth Southwell.

34. Describe the evolution of written norms in human rights.

35. Critically examine P. Sainath's views about globalization. **(2 × 15 = 30 Marks)**