

Standard 12 ENGLISH

Time: 1.30 Hrs.

Marks: 35

PART - I

(10x1=10)

Answer all the Questions

Choose the most appropriate Synonyms for the underlined words:

1. One night, we came upon them in the windy and deserted square.

- a) occupied b) uninhabited c) peopled d) dethrown

2. ...that they only drink it in order to be warmed and stimulated.

- a) motivated b) passive c) discouraged d) admired

Choose the most appropriate Antonyms for the underlined words:

3. They are sufficient to show how subtilized the whole business has become.

- a) suffocative b) enough c) inadequate d) submissive

4. The driver disapproved of the shabby appearance of the boys.

- a) happy b) active c) clear d) tidy

5. Form a new word by adding suitable suffix to the root word class

- a) -ment b) -ic c) -ence d) -al

6. Our team ____ (not win) any game last year. (Fill in the blank with the correct form of the given verb)

7. He is ____ (conscious / conscience) of his wrong doing.

8. You ____ drive carefully on the highway (Use a modal)

- a) will b) should c) would d) might

9. Choose the correct preposition:

The tiger came out ____ the cave ferociously.

- a) on b) along c) of d) from

10. Choose the appropriate linker:

Be quick to hear ____ (then / and) slow to speak.

PART - II

(2x2=4)

Answer any two of the following sets of poetic lines:

11. Like a huge python, winding round and round

The rugged trunk, intended deep with scars

- a) What looks like a python?
b) Mention the figure of speech in the first line.

12. There was a little private gate

A little wicked wicket gate

- a) What is a wicket gate?
b) Pick out the alliterated words in the second line.

13. We could do nothing, being sold

a) Why couldn't they do anything?

b) Why did they feel helpless?

Answer any two of the following:

(2x2=4)

14. Report the following dialogue:

Patient: Doctor, I have a sore throat

Doctor: Take lime and honey.

15. Hari said to me, "I am so happy you have completed your project". (Change into indirect speech)

16. The work was over. Renu went home. (Combine the sentences using "As")

PART - III

Explain the following lines with reference to the context:

(2x3=6)

17. What is that dirge-like murmur that I hear

18. How can this shameful tale be told?

Answer any two of the following in two or three sentences:

(2x3=6)

19. Why did the author avoid going to Lucia's room?

20. What are the author's views on China tea?

21. What made the boys work so hard?

PART - IV

(3x5=15)

Answer any three of the following:

22.a) Justify the title of the story "Two gentlemen of Verona".

(or)

b) What are the aspects that contribute to humour in "A nice cup of tea"?

23.a) How was the castle conquered?

(or)

b) How does nature communicate with Toru Dutt?

24.a) Describe the life of Aksionov in prison.

(or)

b) How did the presence of Richard Parker help Pi?

25.a) Write a letter to your friend describing your plans for the upcoming summer holidays.

(or)

b) Write a letter to the Headmaster of your school requesting him to help you obtain a duplicate marksheet of Class XII which you lost while travelling.

FIRST MID TERM TEST - 2026

Standard XII

Reg.No.

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ENGLISH

Time : 1.30 hrs

Part - I

Marks : 50

15 x 1 = 15

Answer all the questions.

Choose the most appropriate synonyms of the words underlined in the following sentences

1. We watched for a few moments ; then as trade slackened we went over.
a) reduced b) improved c) loosened d) ended
2. One is liable to put in too much milk.
a) eager b) likely c) forced d) certain

Choose the most appropriate antonyms of the words underlined in the following sentences

3. One night, we came upon them in the windy and deserted square.
a) empty b) uninhabited c) isolated d) inhabited
4. One does not feel wise, brave or more optimistic.
a) opportunistic b) systematic c) realistic d) pessimistic
5. Choose the correct expansion of the following abbreviation : ICU
a) Internal Care Unit b) Intensive Care Unit
c) Intensive Casual Unit d) Intensive Critical Unit
6. Choose the plural form of the following: "Alumnus"
a) alumna b) alumni c) alum d) alumn
7. Form a derivative by adding suitable suffix to the root word "Manage".
a) -ful b) -ment c) -ly d) -ity
8. Form a derivative by adding suitable prefix to the root word : "Honour"
a) Mis b) Be c) Dis d) Im
9. Choose the suitable meaning for the following phrase.
The fire was extinguished by the fire brigade.
a) put away b) put up c) put out d) put off
10. Choose the Tri-syllabic word from the following :
a) stupid b) jump c) property d) energetic
11. Fill in the blank with a suitable modal verb.
I wish you _____ tell me the truth.
a) would b) must c) can d) will
12. Fill in the blank with a suitable Semi-modal / Quasi modal verb.
He _____ play cricket when he was young.
a) dare b) ought to c) used to d) need
13. Replace the underlined phrasal verb in the sentence below with a single word:
He cut off a slice from the loaf of bread.
a) joined b) separated c) eliminated d) clutched

Fill in the blanks with suitable homophones.

- The police tried to 14. _____ information from boot legger who
15. sells _____ liquor. (Illicit / Elicit)

Part - II

Read the following sets of poetic lines and answer any three.

3 x 2 = 6

16. All through that summer at ease we lay,
And daily from the turret wall
We watched the mowers in the hay.

a) Who does 'we' refer to?

b) What work do the mowers do?

17. Our gates were strong, our walls were thick
So smooth and high, no man could win.

- a) How safe was the castle? b) Were the walls short?

18. A creeper climbs, in whose embraces bound,
No other tree could live.

- a) Which tree is referred to in the above lines? b) Pick out the words in alliteration.

19. The giant wears the scarf and the flowers are hung
In crimson clusters all the bough among !

- a) Who is the giant here? b) Why is the scarf colourful?

Part - III

Explain the following with reference to the context.

1 x 3 = 3

20. "I will maintain until my death" (OR)

21. Dear is the Casuarina to my soul.

Part - IV

Answer any two of the following in not more than 30 words.

2 x 3 = 6

22. What were the various jobs undertaken by the little boys?

23. How did the narrator help the boys on Sunday?

24. What is the second golden rule in the preparation of tea?

Part - V

Answer the following in a paragraph.

4 x 5 = 20

25. a) Justify the title of the story "Two Gentlemen of Verona". (OR)

b) Summarise George Orwell's distinctive ideas in "A Nice Cup of Tea".

26. a) Human greed led to the mighty fall of the Citadel - Explain. (OR)

b) Describe the reminiscences of the poet, when she sees the Casuarina tree.

27. Develop the following hints into a paragraph of about 150 words.

Aksionov - healthy merchant - Vladimir - happy family - a joyful person - living in his own style - wife loved - bad dreams - stopped from going to the fair - Aksionov met a merchant - murder happened - Aksionov in jail - wife suspected - unable to tolerate - only God could save his life.

28. a) Write a letter to the Headmaster of your school requesting him to help you obtain a duplicate mark sheet of class XII, which you lost while travelling. (OR)

b) Write a summary or make notes of the following passage.

The aim of education is the overall development of the personality of man. It means the development of not only the mind but also the body. Games keep the body fit. Swami Vivekananda was of the view that only a healthy mind can realise God. But a healthy mind can dwell only in a healthy body. For keeping a body healthy, games are indispensable. For this reason Swami Vivekananda has advised that all young men and women should play games. People who have developed the habit of playing games regularly can maintain good health. Games help to build a muscular body. They include sound sleep which is a sign of good health. Therefore games are food for the body as knowledge is food for the mind. In fact, all work makes Jack a dull boy. Everybody likes games because these keep them physically fit and mentally alert.

Games help us to keep our body active and vigorous. They instill in us the spirit of adventure. They enable us to face dangers boldly.



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12TH STD ENGLISH 1ST MID TERM QUESTION PAPER -2026&27

FIRST MID TERM TEST – 2026-27

Standard – XII

ENGLISH

Part – I

Time: 1.30 hrs

Answer all the questions:

Marks: 50

Choose the most appropriate synonyms of the words underlined in the following sentences.

- Nicola was glaring at his young brother in vexation.
a) happiness b) annoyance
c) silence d) calmness
- China tea has virtues which are not to be despised nowadays.
a) Loved b) Hated
c) Declared d) Denied

Choose the most appropriate antonyms of the words underlined in the following sentences.

- Everything is so difficult now, food so scarce and dear.
a) rare b) insufficient
c) abundant d) sentimental
- Teapots are fitted with baskets under the spout to catch the stray leaves.
a) strong b) loose
c) gathered d) harmless

Choose the correct expansion of the following abbreviations.

- GPS:
a) Global Positioning Service
b) Geographical Positioning System
c) Government Publication Service
d) Global Positioning System
- ICU:
a) Intensive Careful Union
b) International Care Union
c) Intensive Care Unit
d) India's Care Unit

Choose the Plural form of the following.

- Apparatus:
a) apparatuses b) apparati
c) apparatusis d) apparatuses
- Syllabus:
a) Syllabuses b) syllable
c) syllabi d) syllabus

Fill in the blanks with the suitable homophones.

- Our _____ is a man of _____.
(principle / principal)

Choose the tetra syllabic word from the following.

- a) accompaniment b) monument
c) particular d) testament
- a) personality b) possibility
c) productivity d) technology

PART – IV

Answer the following in not more than 30 words. (Answer any two) ($2 \times 2\frac{1}{2} = 5$)

- What were the various jobs undertaken by the little boys?
- How did the narrator help the boys on Sunday?
- What are the author's views on China tea?

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Form a derivative by adding a suitable prefix to the root word.

- Patient
a) Un b) Im
c) dis d) be

Form a derivative by adding a suitable suffix to the root word.

- Manage
a) ly b) ment
c) mis d) ful

Fill in the blanks with the suitable modal verbs.

- The rich _____ help the poor.
a) will b) shall
c) should d) might
- We _____ drive carefully on the highway.
a) would b) should
c) will d) could

PART – II

Read the following sets of poetic lines and answer any three. ($3 \times 2 = 6$)

- All through that summer at ease we lay,
And daily from the turret wall
a) What does "we" refer to?
b) How did the soldiers spend the summer days?
- Our gates were strong, our walls were thick
So smooth and high, no man could win.
a) How safe was the Castle?
b) Were the walls short?
- Like a huge python, winding round and round
The rugged trunk, indented deep with scars,
Up to its very summit near the stars.
a) What wound round and round like a python?
b) What is compared to a huge python?
- A creeper climbs, in whose embraces bound
No other tree could live.
a) Which tree is referred to in the above lines?
b) How does the poet describe the creeper?

PART – III

Explain the following with Reference to the Context. ($1 \times 3 = 3$)

(or)

- How can this shameful tale be told?
- Dear is the Casuarina to my soul.

PART – V

Answer the following in a paragraph. ($4 \times 5 = 20$)

- Justify the title of the story "Two Gentlemen of Verona".
- Describe the capture of the Castle.
- Write an application for the post of Personal Secretary to the Managing Director of a company. Include the following details: Educational Qualification, Experience, Various other Qualifications required for the post.
- Make notes of the following passage.

The Brihadeeswarar Temple, also known as the Tanjore (Thanjavur) Periya Kovil or Tanjore Pragaadesware Temple, is a magnificent example of ancient Dravidian architecture located in Tamil Nadu, India. Built by the great Chola king Raja Raja Chola I in the 11th century, the UNESCO World Heritage Site stands as a testament to the grandeur and precision of Chola engineering and artistry. Dedicated to Lord Shiva, the temple is renowned for its massive central vimana (tower), which rises over 200 feet and is crowned by a single granite stone weighing around 80 tons. The temple complex features detailed sculptures, frescoes, and inscriptions that provide insight into the cultural and religious life of the Chola period.

It is one of the largest temples in India and an architectural marvel of South India. The temple walls are adorned with intricate carvings depicting mythological stories and daily life.

The Nandi (sacred bull) statue at the entrance is carved from a single stone and weighs about 25 tons.

Even after a thousand years, the temple continues to attract devotees, historians, and tourists alike.



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12TH STD ENGLISH 1ST MID TERM QUESTION PAPER -2026&27

COMMON FIRST MID TERM TEST – 2026



Standard 12 – ENGLISH



Time: 1.30 Hrs.



Marks: 35

PART – I

Answer all the Questions

Choose the most appropriate Synonyms for the underlined words:

-under the spout to catch the stray leaves.
a) fresh b) loose
c) gathered d) harmful
-my interest was again provoked by their remarkable demeanour.
a) behaviour b) rudeness
c) awareness d) modesty

Choose the most appropriate Antonyms for the underlined words:

- Predicting the arrival of visitors.....
a) journey b) migration
c) departure d) persuasion
- The driver was very cautious.
a) wary b) vigilant
c) needful d) reckless
- Form a new word by adding suitable suffix to the root word familiar.
a) -ing b) -ise
c) -let d) -ed
- Scientists predict that by 2050, man _____ (land) on Mars.
(Use the correct form of the given verb)
- You _____ not prepare for that.
(Use a semi modal)
- Fill in the blank with the suitable preposition.
We shall meet tomorrow evening _____ 6 pm.
a) since b) after
c) during d) within
- Choose the appropriate linker.
I could not attend the party _____ I had to take care of my ailing mother.
a) Although b) until
c) otherwise d) because
- The protruding _____ (route / root) of the tree obstructed our way.
(Use the correct homophone)

PART – II

SECTION – I

Read the following sets of poetic lines and answer any two.

- The giant wears the scarf and flowers are hung
In crimson clusters all the boughs among.
a) Why is the scarf colourful?
b) Mention the alliterated words in the second line.
- We watched the mowers in the hay
And the enemy half a mile away.
a) Who are mowers?
b) Where were the enemies?
- Sometimes, and most in winter – on its crest
A gray baboon sits statue-like alone.
a) What is a baboon?
b) Where was it sitting?

SECTION – II

Answer the following as directed: (any two)

- Prem said to Karthick, "I bought a new watch yesterday."
(Change into indirect speech)
- Report the following dialogue.
Rohin: What are you searching for?
Janani: I have kept my purse somewhere.
- A library is a public place. We see a number of books kept there for reading.
(Combine the sentences using "where")

PART – III

SECTION – I

Explain the following lines with reference to the context:

- "They seemed no threat to us at all."
- "It is the tree's lament, an eerie speech..."

SECTION – II

Answer any two of the following:

- What is the second golden rule in the preparation of tea?
- How did the narrator help the boys on Sunday?
- How does adding sugar affect the taste of tea?

PART – IV

Answer the following in a paragraph.

- a) What was the driving force that made Nicola and Jacopo do various jobs?
(or)
b) Summarise George Orwell's ideas in "A Nice Cup of Tea."
- a) Human greed led to the mighty fall of the Citadel. Explain.
(or)
b) "The poet immortalizes the tree." – Elucidate.
- a) Describe the life of Assiaonov in prison.
(or)
b) Write a letter to the Editor of a newspaper about the nuisance created by the roadside vendors blocking the pavements and occupying the parking zone.



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FIRST MID TERM TEST - 2026

BIOLOGY

Time Allowed : 1.30 Hours]

[Max. Marks : 50

PART - I (Bio-Botany) (Marks : 25)

SECTION - I

I. Choose the appropriate answer given below.

5x1=5

1. The embryo sac contains
a) 7 Nuclei b) 8 Nuclei c) 9 Nuclei d) 6 Nuclei
2. Which of the following represent megagametophyte?
a) Ovule b) Embryo sac c) Nucellus. d) Endosperm
3. First cell of male gametophyte in angiosperm is
a) Microspore b) Megaspore c) Nucleus d) Primary Endosperm Nucleus
4. The phenotypic ratio of Inhibitor genes is
a) 15: 1 b) 13 :3 c) 9 :7 d) 14 :1
5. In his classic experiments on Pea plants, Mendel did not use
a) Flowering position b) Seed colour c) Seed shape d) Pod length

SECTION - II

II. Answer any three of the following.

3x2=6

6. What is Cantharophily?
7. 'Pollination in Gymnosperms is different from Angiosperms' – Give reasons.
8. What are lethal genes?
9. Give the names of the scientists who rediscovered Mendelism
10. What is Apomixis? Mention its type.

SECTION - III

III. Answer any three of the following. (Q.No. 13. Is Compulsory)

3x3=9

11. Draw and label the structure of Embryo sac.
12. Distinguish between Mound layering and Air layering.
13. List out the Post fertilization events.
14. Write short notes on Dihybrid test cross.

SECTION - IV

IV. Answer In Detail.

1x5=5

15. (a) Describe the type of entry of pollen tube into the ovule.

(OR)

- (b) Describe dominant epistasis with an example.

PART – II (BIO-ZOOLOGY) (Max. Marks: 25)

SECTION – I

I. Choose the appropriate answer given below:

5×1=5

- In which type of parthenogenesis are only males produced?
 - Arrhenotoky
 - Thelytoky
 - Amphitoky
 - Both a and b
- The Androgen Binding Protein (ABP) is produced by
 - Sertoli cells
 - Leydig cells
 - Hypothalamus
 - Pituitary gland
- Saheli contains non-steroidal preparation called
 - Progestasert
 - Centchroman
 - LNG – 20
 - Cu 7
- What can be the blood group of offspring when both parents have AB blood group?
 - AB only
 - A, B and AB
 - A, B, AB and O
 - A and B only
- Patau's syndrome is also referred to as
 - 13-Trisomy
 - 18-Trisomy
 - 21-Trisomy
 - None of these

SECTION – II

II. Answer any three of the following.

3×2=6

- What is inhibin? State its functions.
- What are Fraternal twins?
- Define Vasectomy
- What are holandric genes?
- What is Lyonisation?

SECTION – III

III. Answer any three of the following. (Q.No. 13. is Compulsory)

3×3=9

- What is regeneration? Explain its types.
- Write short notes on Pregnancy hormones.
- Tabulate the Genetic basis of the human ABO blood groups.
- Write the preventive measures of STDs.

SECTION – IV

IV. Answer in Detail.

1×5=5

- (a) Give the schematic representation of Spermatogenesis and Oogenesis in Human.

(OR)

- (b) Explain the inheritance of sex-linked characters in human being with an example.

FIRST MID TERM TEST - 2026**Standard XII**Reg.No.

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BIOLOGY**Time : 1.30 hrs****Marks : 50****Marks : 25****Part - I Bio-Botany****Section - A****I. Choose the correct answer.****5 x 1 = 5**

1. Function of filiform apparatus is to
 - a) Recognize the suitable pollen at stigma
 - b) Stimulate division of generative cell
 - c) Produce nectar
 - d) Guide the entry of pollen tube in embryo sac
2. Identify the incorrect pair.
 - a) Sporopollenin - Exine of pollen grain
 - b) Tapetum - Nutritive tissue for developing microspores
 - c) Nucellus - Nutritive tissue for developing embryo
 - d) Obturator - Directs the pollen tube into micropyle
3. Select the period for Mendel's hybridization experiments.
 - a) 1856-1863
 - b) 1850-1870
 - c) 1857-1869
 - d) 1870-1877
4. Sickle cell anaemia is an example for
 - a) Pleiotropy
 - b) Inhibitor gene
 - c) Duplicate supplementary gene
 - d) Complementary gene
5. Which is the non-endospermous seed?
 - a) Maize
 - b) Beans
 - c) Barley
 - d) Wheat

Section - B**II. Answer any Three questions.****3 x 2 = 6**

6. Tapetum is dual in origin. - Justify your answer.
7. Draw diagram and label the parts of dicot seed.
8. What are multiple alleles?
9. What is atavism?
10. What is Endothelium?

Section - C**III. Answer any Three questions. (Q.No.14 is compulsory)****3 x 3 = 9**

11. Distinguish mound layering and air layering.
12. What is polyembryony? How it can commercially exploited?
13. Give the names of the scientists who rediscovered Mentalism.
14. Differentiate continuous variation with discontinuous variation.
15. Describe : Back cross

Section - D**1 x 5 = 5****IV. Answer all the questions.**

16. a) What is Endosperm? Explain its type.
(OR)
- b) Describe chloroplast inheritance? Give example.

Section - A

I. Choose the correct answer.

5 x 1 = 5

1. In which mode of reproduction variations are seen
a) Asexual b) Parthenogenesis c) Sexual d) Both (a) and (b)
2. The Androgen Binding Protein (ABP) is produced by
a) Leydig cells b) Hypothalamus c) Sertoli cells d) Pituitary gland
3. (A) : In Human male, testes are extra abdominal and lie in scrotal sacs.
(R) : Scrotum acts as thermoregulator and keeps temperature lower by 2°C for normal sperm production.
a) (A) and (R) are true, (R) is the correct explanation of (A)
b) (A) and (R) are true, (R) is not the correct explanation of (A)
c) (A) is true (R) is false d) Both (A) and (R) are false
4. Match Column I with Column II and select the correct option from the codes given below :

Column I	Column II
A. Copper releasing IUD	i) LNG-20
B. Hormone releasing IUD	ii) Lippes Loop IUD
C. Non-medicated IUD	iii) Saheli
D. Mini pills	iv) Multiload 375

 a) A-(iv) B-(ii) C-(i) D-(iii) b) A-(iv) B-(i) C-(iii) D-(ii)
 c) A-(i) B-(iv) C-(ii) D-(iii) d) A-(iv) B-(i) C-(ii) D-(iii)
5. Down's syndrome is a genetic disorder which is caused by the presence of an extra
a) 20 b) 21 c) 4 d) 23

Section - B

II. Answer any Three questions.

3 x 2 = 6

6. What is repeated fission? Give example.
7. What is acrosomal reaction?
8. Expand the acronyms : a) FSH b) hCG
9. What are symptoms of cervical cancer?
10. What is Criss-cross inheritance?

Section - C

III. Answer any Three questions. (Q.No.13 is compulsory)

3 x 3 = 9

11. What is Regeneration? Mention its types.
12. What is colostrum? What are its significance.
13. GIFT - Write notes.
14. Give any three reasons for infertility.
15. What is Lyonisation.

Section - D

IV. Answer all the questions.

1 x 5 = 5

16. a) Explain the different kinds of syngamy in living organisms with examples.
(OR)

b) Explain the structure of human sperm with a neat labelled diagram.



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12TH BIOLOGY



1ST MID TERM IMPORTANT QUESTION -2026 & 27

★ MOST IMPORTANT 2 & 5 MARKS QUESTIONS ★

BIO - BOTANY



UNIT – 6, Chapter 1

Asexual and Sexual Reproduction in Plants

2 MARKS

21, 22, 23, 25, 27, 29, 31, 32, 33,
36, 37, 38, 39, 40, 42

1.7 – Apomixis,
Functions of Endosperm

5 MARKS

34, 43, 44, 45, 47, 48, 49

Diagram – Ovules, anther,
embryo sac

UNIT – 7, Chapter 2

Classical Genetics

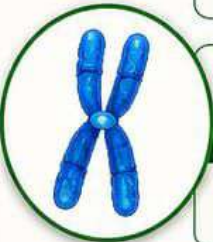
2 MARKS

22, 23, 24, 25, 26, 27, 30, 31, 34

5 MARKS

32, 33, 36

2.4.1 – Incomplete Dominance



UNIT – 7, Chapter 3

Chromosomal Basis of Inheritance

2 MARKS

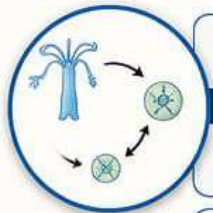
10, 12, 16, 17

5 MARKS

13, 18

Significance of Ploidy (Page.no 64)

BIO - ZOOLOGY



UNIT – 1, Chapter 1

Reproduction in Organisms

2 MARKS

5, 7, 8, 9, 10, 12, 13

5 MARKS

14

Parthenogenesis

UNIT – 1, Chapter 2

Human Reproduction

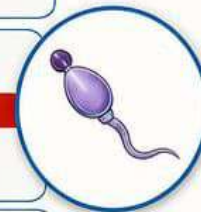
2 MARKS

17, 18, 19, 20, 21, 22, 23, 24, 25,
26, 28, 33

5 MARKS

29, 30, 31

Structure of sperm



UNIT – 1, Chapter 3

Reproductive Health

2 MARKS

12, 13, 14, 15, 16, 17, 19

5 MARKS

20

UNIT – 2, Chapter 4

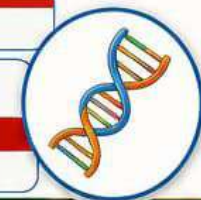
Principles of Inheritance and Variation

2 MARKS

22, 24, 28, 29, 32, 33

5 MARKS

30, 31



FOCUS



PRACTICE

SCORE
100/100
ALL THE BEST



ACHIEVE



SUCCESS
IS IN YOUR HANDS



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FIRST MID - TERM TEST - 2025

12 - STD

BUSINESS MATHEMATICS AND
STATISTICS

Time : 1.30 Hrs

Marks : 45

I Choose the correct answer $10 \times 1 = 10$

1. If $A = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$ then the rank of AA^T is a) 0 b) 1 c) 2 d) 3
2. If $A \neq 0$ then A is a) Non singular matrix b) Singular matrix
c) Zero matrix d) None of these
3. Rank of a null matrix is a) 0 b) -1 c) ∞ d) 1
4. $\int \frac{1}{x^3} dx$ is a) $\frac{-3}{x^2} + C$ b) $\frac{-1}{2x^2} + C$ c) $\frac{-1}{3x^2} + C$ d) $\frac{-2}{x^2} + C$
5. $\int_0^1 (2x+1) dx$ is a) 1 b) 2 c) 3 d) 4
6. $\int_0^{\infty} e^{-2x} dx$ is a) 0 b) 1 c) 2 d) $1/2$
7. $\int \cos x dx$ a) $\sin x + c$ b) $\sec x + c$ c) $\tan x + c$ d) $-\sin x + c$
8. The demand and supply functions are given by $D(x) = 16 - x^2$, $S(x) = 2x^2 + 4$ are under perfect competition then the equilibrium price x is a) 2 b) 3 c) 4 d) 5
9. The profit of a function $p(x)$ is maximum when, a) $MC - MR = 0$ b) $MC = 0$ c) $MR = 0$ d) $MC + MR = 0$
10. Area bounded by $y = |x|$ between the limits 0 and 2 is a) 1 Sq. units b) 3 Sq. units c) 2 Sq. units d) 4 Sq. units

II Answer any four questions. Q. No. 15 is compulsory. $4 \times 2 = 8$

11. Find the rank of the matrix $\begin{pmatrix} 0 & -1 & 5 \\ 2 & 4 & -6 \\ 1 & 1 & 5 \end{pmatrix}$

12. Solve using Cramer's rule $2x + 3y = 7$; $3x + 5y = 9$.
13. Evaluate : $\int \frac{3x^2 + 2x + 1}{x} dx$
14. Evaluate $\int \sqrt{x^2 - 4x + 3} dx$.
15. Find the area of the region bounded by the parabola $y = 4 - x^2$, x axis and the lines $x = 0$, $x = 2$.

III Answer any four questions. Q. No. 20 is compulsory.

4 X 3 = 12

16. Consider the matrix of transition probabilities of a product available in the market in two brands A and B $\begin{matrix} A & B \\ \begin{pmatrix} 0.9 & 0.1 \\ 0.3 & 0.7 \end{pmatrix} \end{matrix}$ Determine the market share of each brand in equilibrium position.

17. For what values of the parameter λ , will the following equations fail to have unique solution $3x - y + \lambda z = 1$, $2x + y + z = 2$, $x + 2y - \lambda z = -1$ by rank method.

18. Evaluate $\int \frac{3x + 2}{(x - 2)^2(x - 3)} dx$

19. Evaluate $\int \frac{e^x + 7}{e^x} dx$

20. Find the producer's surplus defined by the supply curve $g(x) = 4x + 8$ when $X_0 = 5$

IV Answer all the questions.

3 X 5 = 15

21. Investigate for what values of 'a' and 'b' the following system of equations. $x + y + z = 6$, $x + 2y + 3z = 10$, $x + 2y + 9z = b$ have i) no solution ii) a unique solution iii) an infinite number of solution. (OR)

Show that the equations $2x + y + z = 5$, $x + y + z = 4$, $x - y + 2z = 1$ are consistent and hence solve them.

22. Evaluate $\int_2^5 \frac{\sqrt{x}}{\sqrt{x} + \sqrt{7 - x}} dx$ (OR)

Evaluate the integral as a the limit of a sum $\int_0^1 x dx$.

23. The elasticity of demand with respect to price P for a commodity is

$$\eta_d = \frac{p + 2p^2}{100 - p - p^2}. \text{ Find demand function where price is Rs. 5 and the demand is}$$

70. (OR)

The demand and supply function of a commodity are $P_d = 18 - 2x - x^2$, $P_s = 2x - 3$. Find the consumer's surplus and producer's surplus at equilibrium price.

வகுப்பு 12

வணிகக் கணிதம் மற்றும் புள்ளியியல்

கால அளவு : 1.30 மணிநேரம்

மதிப்பெண்கள் : 60

I. சரியான விடையைத் தேர்ந்தெடு:

10×1=10

- 1) $|A| \neq 0$, எனில் A ஒரு _____.
 a) பூச்சிய அணி b) பூச்சியக்கோவை அணி
 c) பூச்சியமற்ற கோவை அணி d) மேற்கண்ட ஏதுமில்லை
- 2) $T = \begin{matrix} A & B \\ \begin{pmatrix} 0.7 & 0.3 \\ 0.6 & x \end{pmatrix} \end{matrix}$ என்பது மாறுதல் நிகழ்வு அணி எனில், xன் மதிப்பு _____.
 a) 0.7 b) 0.4 c) 0.3 d) 0.2
- 3) $P(A) = P([A,B])$ = மாறிகளின் எண்ணிக்கை எனில், தொகுப்பானது
 a) ஒருங்கமைவுடையது
 b) ஒருங்கமைவற்றது
 c) ஒருங்கமைவுடையது மற்றும் எண்ணற்ற தீர்வுகளை பெற்றுள்ளது
 d) ஒருங்கமைவுடையது மற்றும் ஒரே ஒரு தீர்வினை பெற்றுள்ளது
- 4) $|A_{n,n}| = 3$ மற்றும் $|\text{adj } A| = 243$ எனில், n ன் மதிப்பு
 a) 4 b) 5 c) 6 d) 7
- 5) $\int \sqrt{e^x} dx =$ _____.
 a) $\frac{1}{2} \sqrt{e^x} + C$ b) $\frac{1}{2\sqrt{e^x}} + C$ c) $2\sqrt{e^x} + C$ d) $\sqrt{e^x} + C$
- 6) $\int_{-\pi/2}^{\pi/2} \cos x dx$ -ன் மதிப்பு _____.
 a) 0 b) 1 c) 2 d) 4
- 7) $|\overline{(n)}| =$ _____.
 a) $n!$ b) $n|\overline{(n)}|$ c) $(n-1)!$ d) $(n-1)|\overline{(n)}|$
- 8) $y = x(4-x)$ என்ற வளைவரையானது 0 மற்றும் 4 எனும் எல்லைகளுக்கும், x-அச்சுடன் ஏற்படுத்தும் பரப்பு _____. ச.அ.
 a) $\frac{15}{2}$ b) $\frac{30}{3}$ c) $\frac{32}{3}$ d) $\frac{31}{2}$
- 9) இலாபச் சார்பு $P(x)$ ஆனது பெருமமடைவது
 a) $MC = 0$ b) $MR = 0$ c) $MC - MR = 0$ d) $MC + MR = 0$
- 10) ஒரு சந்தை பொருளின் தேவை மற்றும் அளிப்புச் சார்புகள் முறையே $P(x) = (x-5)^2$ மற்றும் $S(x) = x^2 + x + 3$ எனில், அதன் சமநிலை விலை $x_0 =$ _____.
 a) 1 b) 2 c) 3 d) 5

II. எவையேனும் நான்கனுக்கு மட்டும் விடையளி:

4×2=8

- 11) $\begin{bmatrix} -1 & 2 & -2 \\ 4 & -3 & 4 \\ -2 & 4 & -4 \end{bmatrix}$ என்ற அணியின் தரத்தினைக் காண்க.

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12) கிரேமரின் விதியைப் பயன்படுத்தித் தீர்வு காண்க: $2x + 3y = 7$ மற்றும் $3x + 5y = 9$.

13) மதிப்பிடுக: $\int_0^{\pi} \sin x \, dx$.

14) மதிப்பிடுக: $\int_0^1 e^{-x} x^4 \, dx$.

15) $MR = 20 - 5x + 3x^2$ எனில், மொத்த வருவாய்ச் சார்பு காண்க.

16) $y = 4x + 3$ என்ற வளைவரை x -அச்சு, $x = 1$ மற்றும் $x = 4$ ஆகியவற்றுடன் ஏற்படுத்தும் பரப்பைக் காண்க.

III. எவையேனும் நான்கனுக்கு மட்டும் விடையளி:

4×3=12

17) தரப்பட்ட சமன்பாடுகள் ஒருங்கமைவு அற்றவை எனில், Kன் மதிப்பு காண்க.

$$x + y + z = 7, x + 2y + 3z = 18 \text{ மற்றும் } y + Kz = 6$$

18) சந்தையில் உள்ள A மற்றும் B ஆகிய தர அடையாளம் கொண்ட பொருள்களுக்கான

மாறுதல் நிகழ்தகவு அணி $\begin{matrix} & A & B \\ A & 0.9 & 0.1 \\ B & 0.3 & 0.7 \end{matrix}$ எனில், சமநிலையில் தர அடையாளம்

கொண்ட ஒவ்வொரு பொருள்களுக்கான சந்தை பங்கீடுகளைக் காண்க.

19) மதிப்பிடுக: $\int_1^2 \log \left(\frac{2-x}{2+x} \right) dx$.

20) மதிப்பிடுக: $\int (x^2 - 2x + 5)e^x \, dx$.

21) புதிய உற்பத்தி பொருளின் விவிதச் சார்பு $f(x) = 100 - 90e^{-x}$ என்க. இங்கு x என்பது சந்தையில் அப்பொருள் கிடைக்கும் நாட்களின் எண்ணிக்கை என்க. முதல் நான்கு நாட்களில் அந்த பொருளின் மொத்த விற்பனையைக் காண்க. ($e^{-1} = 0.018$)

22) ஒரு நெகிழ்ச்சி சார்பு $\frac{E_y}{E_x}$ என்பது $\frac{E_y}{E_x} = \frac{-7x}{(1-2x)(2+3x)}$ என வரையறுக்கப்பட்டு $x = 2, y = \frac{3}{8}$ எனும் பொழுது அச்சார்பைக் காண்க.

IV. எவையேனும் நான்கனுக்கு மட்டும் விடையளி:

4×5=20

23) தேவைச் சார்பு $P_d = 25 - 3x$ மற்றும் அளிப்புச் சார்பு $P_s = 5 + 2x$ எனில், சமநிலையில் நுகர்வோர் உபரி மற்றும் உற்பத்தியாளர் உபரியைக் காண்க.

24) $y = |x + 3|$ என்ற வளைவரையை வரைக. மேலும் $\int_6^0 |x+3| \, dx$ இன் மதிப்பைக் காண்க.

25) வரையறுத்த தொகையீட்டை ஒரு கூட்டலின் எல்லை எனக் கொண்டு $\int_1^3 (2x+3) \, dx$ -ஐ மதிப்பிடுக.

26) மதிப்பிடுக: $\int \frac{7x-1}{x^2-5x+6} \, dx$.

27) கிரேமரின் விதியைப் பயன்படுத்தித் தீர்க்க: $x + 4y + 3z = 2, 2x - 6y + 6z = -3$ மற்றும் $5x - 2y + 3z = -5$.

28) சந்தையில் உள்ள A மற்றும் B இரு வகையான சோப்புகளின் தற்போதைய சந்தைப் பங்கீடு 15% மற்றும் 85% ஆகும். சென்ற ஆண்டு A வாங்கியவர்களின் 65% பேர் மீண்டும் அதை இந்த ஆண்டும் வாங்குகிறார்கள். 35% பேர் B-க்கு மாறி விடுகின்றனர். சென்ற ஆண்டு B வாங்கியவர்களில் 55% பேர் இந்த ஆண்டும் மீண்டும் அதை வாங்குகிறார்கள். 45% பேர் A-க்கு மாறி விடுகிறார்கள். ஒரு ஆண்டுக்குப் பிறகு அவற்றின் சந்தைப் பங்கீடுகளைக் காண்க. மேலும் சந்தையில் சமநிலை எப்போது எட்டப்படும்?