

This Question Booklet contains
24 printed pages

DE-2025

Total Marks : 200

Time : 150 Minutes

**Candidate's
Seat No. :**

Question
Booklet
Code :

A

A

Seal Sticker

Candidate's Signature _____

Block Supervisor's Signature _____

DO NOT OPEN QUESTION BOOKLET UNTIL INSTRUCTED.

INSTRUCTIONS FOR CANDIDATE:

1. Check Number printed on your OMR SHEET and Question Paper with your SEAT No. before answering the questions. Consult block supervisors in case the above mentioned numbers do not match with your seat number.
2. There are two sections in this question paper. There are total 100 questions. For answer of each question A, B, C, D, E options are given in OMR SHEET. In OMR SHEET, there is "E" option. "E" option is for "Not Attempted". If candidate do not wish to answer the question he/she should select "E" option (Not Attempted). All questions are compulsory.

For Example:

Which state of India has the longest sea shore ?

A B C D E

(A) Maharashtra (B) Tamilnadu

(C) Gujarat (D) Andhra Pradesh

In this example, the right answer is (C). Therefore, the Circle of (C) has been darkened (encoded). Candidate should not give the answer "Gujarat" in writing.

The options once darkened/answered by candidate cannot be changed.

3. Candidates are not permitted to leave examination hall during examination.
4. Candidates must strictly enter SEAT NO. in the designated space provided in OMR SHEET as well as Question Paper neatly as soon as they receive the OMR SHEET & Question Paper.
5. Candidates must not write name or put any identification sign/symbol on OMR SHEET. In such case strict disciplinary action will be taken against candidate & will be considered disqualified/ineligible. Only Seat No. must be entered at designated space provided in OMR SHEET.

6. Both, Candidate's & Supervisor's signature must be done on Certificate of OMR SHEET. Unsigned OMR SHEET would not be considered for evaluation.
7. Candidates are not permitted to use or carry with them any kind of literature, guide, hand written notes, or printed books, mobile phone, pagers, smart watches, camera or any electronic gadgets to examination hall.
8. Use of only Non-scientific / Non-programmable calculator shall allow during examination.
9. Candidates are not permitted to talk/discuss in the Examination Hall. Any candidate found violating supervisor's instructions will be disqualified.
10. Candidates must fully darken circle A, B, C, D and E accordingly with Blue / Black ball pen. If answers are marked with any other coloured ball pen, pencil, white ink (whitner), any corrections are done by candidate by means of blade or rubber or whitner will not be considered for evaluation.
11. Candidates may carry QP with them after Examination.
12. **For correct answer 2 (Two) marks will be given.**

For negative marking :

If candidate -

- Gives wrong answer or
- Darkens more than one option (multi mark) as answer for one question

in OMR SHEET then 0.50 marks will be deducted.

If candidate does not want to answer a particular question and marks (E) or leave the option without encoding on OMR sheet, then no minus marks will be given.

Submit the OMR SHEET to the block supervisor after completion of examination without fail before leaving examination hall, failure to do so will result in disqualification of the candidature for the examination and disciplinary action will be taken against such candidate.

SECTION - 1

1. $CaCO_{3(s)} \xrightarrow{\text{ઉષ્ણ}} CaO_{(s)} + CO_{2(g)}$, પ્રક્રિયા કેવા પ્રકારની કહી શકાય ?

(A) વિસ્થાપન પ્રક્રિયા (B) ઓક્સિડેશન પ્રક્રિયા
 (C) ઉષ્ણીય વિઘટન પ્રક્રિયા (D) અવક્ષેપન પ્રક્રિયા

2. લોડ સલ્ફેટનું સુત્ર ક્યું છે ?

(A) Pb_2SO_4 (B) $Pb(SO_4)_2$
 (C) $PbSO_4$ (D) $Pb_2(SO_4)_3$

3. $Al + HCl \rightarrow AlCl_3 + H_2$ નું સમતોલિત સમીકરણ ક્યું છે ?

(A) $Al + HCl \rightarrow AlCl_3 + 2H_2$ (B) $2Al + 6HCl \rightarrow 2AlCl_3 + 3H_2$
 (C) $2Al + 3HCl \rightarrow 2AlCl_3 + 2H_2$ (D) $2Al + 4HCl \rightarrow 3AlCl_3 + 3H_2$

4. સોડિયમ હાઇડ્રોક્સાઈડની લિંક ધાતુ સાથેની પ્રક્રિયા દ્વારા કઈ મુખ્ય નીપજ મળશે ?

(A) $NaZnO_2$ (B) $NaZn_2O$
 (C) Na_2ZnO_2 (D) $Zn(OH)_2$

5. કેવા પ્રકારના ઓક્સાઈડને બેઝિક ઓક્સાઈડ કહે છે ?

(A) અધાત્વીય ઓક્સાઈડ (B) ધાત્વીય ઓક્સાઈડ
 (C) (A) અને (B) બન્ને (D) નિષ્ક્રિય ઓક્સાઈડ

6. નીચેનામાંથી ક્યું સંયોજન મિલ્ક ઓફ મેનેશિયા તરીકે ઓળખાય છે ?

(A) $Mn(OH)_2$ (B) $Mg(OH)_2$
 (C) MgO (D) $Mg(OH)$

7. નીચેનામાંથી વિરંજન (ખ્લીચિંગ) પાઉડરનું રાસાયણિક સુત્ર ક્યું છે ?

(A) $Ca(OH)_2$ (B) $CaOCl_2$
 (C) Ca_2OCl (D) $CaCO_3 \cdot 2H_2O$

8. ચમકદાર અધાતુ નીચેનામાંથી કઈ છે ?

(A) આયોડિન (B) કાર્બન
 (C) નાઈટ્રોજન (D) પ્રોમીન

9. નીચેનામાંથી કઈ ધાતુ ઠંડા કે ગરમ પાણી સાથે પ્રક્રિયા કરતી નથી, પરંતુ બાધ્ય સાથે પ્રક્રિયા કરે છે ?

(A) એલ્યુમિનિયમ (B) લોંડન
 (C) લિંક (D) આપેલ બધાજ

10. નીચેનામાંથી ધાતુઓની પ્રતિક્રિયાત્મકતાનો ક્યો ક્રમ સાચો છે ?

(A) $Mg > Al > Zn > Fe$ (B) $Mg > Fe > Zn > Al$
 (C) $Fe > Zn > Al > Mg$ (D) $Mg > Al > Fe > Zn$

SECTION - 1

1. $CaCO_{3(s)} \xrightarrow{heat} CaO_{(s)} + CO_{2(g)}$, which kind of reaction is this ?
(A) Displacement reaction (B) Oxidation reaction
(C) Thermal decomposition reaction (D) Precipitation reaction

2. What is the formula of lead sulphate ?
(A) Pb_2SO_4 (B) $Pb(SO_4)_2$
(C) $PbSO_4$ (D) $Pb_2(SO_4)_3$

3. Which is the balance equation of $Al + HCl \rightarrow AlCl_3 + H_2$?
(A) $Al + HCl \rightarrow AlCl_3 + 2H_2$ (B) $2Al + 6HCl \rightarrow 2AlCl_3 + 3H_2$
(C) $2Al + 3HCl \rightarrow 2AlCl_3 + 2H_2$ (D) $2Al + 4HCl \rightarrow 3AlCl_3 + 3H_2$

4. Which main product is obtained by reaction of sodium hydroxide with zinc metal?
(A) $NaZnO_2$ (B) $NaZn_2O$
(C) Na_2ZnO_2 (D) $Zn(OH)_2$

5. Which type of oxides is called basic oxide ?
(A) Non-metallic oxide (B) Metallic oxide
(C) (A) and (B) both (D) Inactive oxide

6. Which of the following is known as milk of magnesia?
(A) $Mn(OH)_2$ (B) $Mg(OH)_2$
(C) MgO (D) $Mg(OH)$

7. Which of the following is the chemical formula of bleaching powder?
(A) $Ca(OH)_2$ (B) $CaOCl_2$
(C) Ca_2OCl (D) $CaCO_3 \cdot 2H_2O$

8. Which of the following is the lustrous non-metal ?
(A) Iodine (B) Carbon
(C) Nitrogen (D) Bromine

9. Which of the following metals neither reacts with cold nor hot water, but reacts with vapour ?
(A) Aluminium (B) Iron
(C) Zinc (D) All of the above

10. Which of the following is correct order of reactivity of metals ?
(A) $Mg > Al > Zn > Fe$ (B) $Mg > Fe > Zn > Al$
(C) $Fe > Zn > Al > Mg$ (D) $Mg > Al > Fe > Zn$

11. કમ્પ્યુટરમાં ડેટાના સૌથી નાના એકમને કહેવામાં આવે છે.
(A) બાઈટ (B) બીટ
(C) નીબલ (D) ઇબી

12. કી-બોર્ડ પર *Ctrl + Home* કી દ્વારાવાથી કર્સર MS-Wordમાં પર જાય છે.
(A) ડોક્યુમેન્ટના અંતમાં (B) લાઈનની શરૂઆતમાં
(C) પેરેગ્રાફ્ની શરૂઆતમાં (D) ડોક્યુમેન્ટની શરૂઆતમાં

13. HTMLમાં નીચેનામાંથી કઈ લિંકને સંબંધિત (રીલેટીવ) લિંક તરીકે વર્ગીકૃત કરી શકાય ?
(A)
(B)
(C)
(D) All of the above

14. MS-Excelમાં A2, B2, C2 અને D2 માં સેલ મૂલ્યોની કુલ વેલ્યુ શોધવા માટે યોગ્ય સૂત્ર છે.
(A) Sum (A2 : D2) (B) Sum (A2, B2, C2, D2)
(C) (A) અને (B) બન્ને (D) ઉપરમાંથી એક પણ નહીં

15. માઈક્રોસોફ્ટ પાવરપોઇન્ટ પ્રેઝન્ટેશનના વ્યુ મેનુમાં નીચેનામાંથી કયો વિકલ્પ ખોટો છે ?
(A) ટ્રી વ્યુ (B) આઉટલાઈન વ્યુ
(C) નોટ્સ પેજ (D) રીડિંગ વ્યુ

16. લીલા છોડ પોતાનો ખોરાક પોતે બનાવે છે જેને તરીકે ઓળખવામાં આવે છે.
(A) હેટ્રોટ્રીફ્સ (B) એટ્રોટ્રીફ્સ
(C) સેપ્રોટ્રીફ્સ (D) સર્વભક્ષી

17. માટે બેગ ફિલ્ટરનો ઉપયોગ કરવામાં આવે છે.
(A) અવાજ પ્રદૂષણ ઘટાડવા (B) ગંદા પાણીમાંથી કાદવ ઘટાડવા માટે
(C) દૂષિત ગેસ પ્રવાહમાંથી રજકણો દૂર કરવા (D) જમીનનું પ્રદૂષણ ઘટાડવા

18. પૃથ્વીની સપાટીની અંદર રહેલી ગરમીનો ઉપયોગ કરીને ઊર્જા ઉત્પન્ન કરવાની પ્રક્રિયાને કહેવામાં આવે છે.
(A) શ્રો-થર્મલ ઊર્જા (B) હાઇડ્રો થર્મલ ઊર્જા
(C) સૌર ઊર્જા (D) તરંગ ઊર્જા

19. એ એક ઉપકરણ છે જે સૌર ઊર્જાનું સીધુ વીજળીમાં રૂપાંતરિત કરે છે.
(A) ફ્યુઅલ સેલ (B) હાઇડ્રોજન સેલ
(C) સોલર એરે (D) ફોટોવોલ્ટેએક સેલ

20. પેરિસ સમજૂતીનો ઘેય વૈશ્વિક તાપમાનના વધારાને પૂર્વ-ઔદ્યોગિક સ્તરથી નીચે રાખવાનો છે.
(A) 1.0°C (B) 1.5°C
(C) 2.0°C (D) 2.5°C

11. The smallest unit of data in a computer is called a :
(A) Byte (B) Bit
(C) Nibble (D) GB

12. Pressing *Ctrl + Home* keys on the Keyboard moves the cursor to the _____ in MS-Word.
(A) End of the document (B) Beginning of the line
(C) Beginning of the paragraph (D) Beginning of the document

13. Which of the following can be classified as a relative link in the HTML ?
(A)
(B)
(C)
(D) All of the above

14. To find the total value of the cell values in A2, B2, C2 and D2 in MS-Excel, the correct formula is:
(A) sum (A2:D2) (B) sum (A2, B2, C2, D2)
(C) Both (A) and (B) (D) None of the above

15. Which of the following is an incorrect option in the view menu of a Microsoft Powerpoint presentation ?
(A) Tree view (B) Outline view
(C) Notes page (D) Reading view

16. The green plants manufacture their own food are known as _____.
(A) Heterotrophs (B) Autotrophs
(C) Saprotrophs (D) Omnivores

17. Bag filters are used to _____.
(A) reduce noise pollution
(B) reduce sludge from waste water
(C) remove particulate matter for a contaminated gas stream
(D) reduce soil pollution

18. The process of producing energy by utilizing heat trapped inside the earth surface is known as _____.
(A) Geo-Thermal energy (B) Hydrothermal energy
(C) Solar energy (D) Wave energy

19. _____ is a device that converts solar energy directly into electricity.
(A) Fuel cell (B) Hydrogen cell
(C) Solar array (D) Photovoltaic cell

20. The goal of the Paris Agreement is to keep the increase in global temperature well below _____ above Preindustrial levels.
(A) 1.0°C (B) 1.5°C
(C) 2.0°C (D) 2.5°C

21. 2025માં સાર્થક અંકો છે.

(A) 3 (B) 4
(C) 2 (D) 5

22. શૂન્ય નુટિ નુટિનું ઉદાહરણ છે.

(A) વ્યવસ્થિત (B) અવ્યવસ્થિત
(C) મહત્તમ (D) લઘુત્તમ

23. 1 જુલ = અગ્ર

(A) 10^3 (B) 10^5
(C) 10^7 (D) 10^9

24. CGS પ્રણાલીમાં પાણીની ઘનતા છે.

(A) 1000 (B) 100
(C) 10 (D) 1

25. સૂત્ર ઘનતા $s = \frac{m}{V}$, માટે દ્વયમાન m માં પ્રતિશત નુટિ 0.3% અને ત્રિજ્યા r માં પ્રતિશત નુટિ 0.5% હોય તો ગોળાની ઘનતામાં પ્રતિશત નુટિ હશે.

(A) 1.8 (B) 1.5
(C) 1.2 (D) 1.1

26. એક માઈકોમિટર સ્કૂનો પેચ 1 mm છે. તેની વર્તુળકાર માપપદ્ધી પર 100 કાપા હોય તો તેની લઘુત્તમ માપશક્તિ શું થાય ?

(A) 1 mm (B) 0.1 mm
(C) 0.01 mm (D) 0.001 mm

27. રેખ્યિ વેગમાનનો SI એકમ છે.

(A) Kg s / m (B) Kg m / s
(C) m s / Kg (D) Kg s m

28. કેન્દ્રગામી બળ હંમેશા તરફ લાગે છે.

(A) કેન્દ્રથી દૂર (B) સ્પર્શકની દિશામાં
(C) ગતિને લંબ દિશામાં (D) કેન્દ્ર તરફ

29. પદાર્થ પર લાગતો બાધ બળ શૂન્ય હોય તો પ્રવેગ
(A) વધે છે. (B) ઘટે છે.
(C) શૂન્ય બરાબર થાય. (D) અચળ રહે છે.

30. ત્રિજ્યા r નાં વર્તુળમાં અચળ ઝડપ v થી ફરતા પદાર્થનાં કોણીય વેગનું સૂત્ર નીચે મુજબ આપી શકાય.

(A) v/r (B) vr
(C) vr^2 (D) vr^3

21. Number of significant digits in 2025 is _____.
(A) 3 (B) 4
(C) 2 (D) 5

22. Zero error is an example of _____ error.
(A) Systematic (B) Random
(C) Maximum (D) Minimum

23. 1 joule = _____ erg.
(A) 10^3 (B) 10^5
(C) 10^7 (D) 10^9

24. Density of water in CGS system is _____.
(A) 1000 (B) 100
(C) 10 (D) 1

25. In equation density $s = \frac{m}{V}$, if percentage error in mass m is 0.3% and for radius r is 0.5% then percentage error in density of a Sphere is _____.%
(A) 1.8 (B) 1.5
(C) 1.2 (D) 1.1

26. The pitch of micrometer screw is 1 mm. There are 100 divisions on it's circular scale. What will be the least count of the micrometer screw.
(A) 1 mm (B) 0.1 mm
(C) 0.01 mm (D) 0.001 mm

27. The SI Unit of linear momentum is _____.
(A) $\text{Kg s} / \text{m}$ (B) $\text{Kg m} / \text{s}$
(C) $\text{m s} / \text{Kg}$ (D) Kg s m

28. The centripetal force always acts _____.
(A) Away from the centre (B) In tangential direction
(C) Perpendicular to the motion (D) Towards the centre

29. When external force acting on a body is zero then its acceleration is _____.
(A) increases (B) decreases
(C) equal to zero (D) remains constant

30. The formula for angular velocity of a body moving with a constant speed v in a circle of radius r is given by _____.
(A) v/r (B) vr
(C) vr^2 (D) vr^3

31. 10 kg દ્વયમાન અને 9.8 m/s^2 પ્રવેગ વાળો પદાર્થ કેટલું બળ ઉત્પન્ન કરે છે ?
(A) 9.8 ન્યુટન (B) 98 ન્યુટન
(C) 0.98 ન્યુટન (D) 980 ન્યુટન

32. શે 50 kg દ્વયમાન વાળો એક પદાર્થ 2 m ત્રિજ્યા વાળા વર્તૂળમાં 60 m/s નો અચળ ઝડપથી ફેરવવામાં આવે તો તેનો ક્રેન્ડ્રગામી પ્રવેગ કેટલો થાય ?
(A) 6000 m/s^2 (B) 3000 m/s^2
(C) 1800 m/s^2 (D) 1500 m/s^2

33. વિદ્યુત ફ્લક્સનો SI એકમ છે.
(A) C^2/Nm (B) Nm/C
(C) Nm/C^2 (D) Nm^2/C

34. વિદ્યુતક્ષેત્ર રેખાઓ હોય છે.
(A) કાલ્પનિક (B) વાસ્તવિક
(C) આદર્શ (D) ઉપરમાંથી એકપણ નહિં

35. 1 કુલંબ વીજભારમાં ઈલેક્ટ્રોન્સની સંખ્યા કેટલી હોય છે?
(A) 6.25×10^{17} (B) 6.25×10^{18}
(C) 6.25×10^{19} (D) 6.25×10^{20}

36. કેપેસીટરની બે પ્લેટો વચ્ચે અવાહક પદાર્થ મૂકવામાં આવે તો કેપેસીટરનું કેપેસીટન્સ
(A) વધે છે. (B) ઘટે છે.
(C) અચળ રહે છે. (D) શૂન્ય થાય છે.

37. જો બે વીજભારો વચ્ચેનું અંતર બમણું કરવામાં આવે તો તેમની વચ્ચેનું વિદ્યુતીય બળ થાય.
(A) અડું (B) બમણું
(C) ચતુર્થ ભાગ (D) ચાર ગણું

38. 5Ω , 10Ω અને 15Ω નાં ત્રણ અવરોધોને શ્રેણી જોડાણથી જોડેલા હોય તો તેમનો સમતુલ્ય અવરોધનું મૂલ્ય કેટલું હશે ?
(A) 10Ω (B) 30Ω
(C) 20Ω (D) 5.5Ω

39. એકમ દ્વયમાન દીઠ પદાર્થની ઉંઘાધારિતાને તે પદાર્થની કહે છે.
(A) વિશિષ્ટ ઉંઘા (B) સાપેક્ષ ઉંઘા
(C) C_p (D) C_v

40. $1 \text{ KCal} = \text{_____ J.}$
(A) 4.186 (B) 4186
(C) 41.86 (D) 418.6

41. કાચના મોટા ટૂકડાને પહેલાં ગરમ કરીને પછી તેને ઢંડો પડવા દેવામાં આવે ત્યારે ઢંડો થયા પછી તેમાં એક તિરાં પડે છે. આનું એક સંભવિત કારણ છે.

(A) ઉચ્ચ ગલનબિંદુ (B) ઉચ્ચ ઉખાવાહકતા

(C) ઉચ્ચ વિશિષ્ટ ઉખા (D) ઓછી ઉખાવાહકતા

42. જ્યારે ઉકળેલા પાણીને ઉખા આપવામાં આવે છે. ત્યારે પાણીનું તાપમાન છે.

(A) વધે (B) ઘટે

(C) અચળ રહે (D) ઉપરનામાંથી એકપણ નહિં

43. $37^{\circ}\text{C} = \text{_____ }^{\circ}\text{F.}$

(A) 98.6 (B) 98.8

(C) 97.6 (D) 96.8

44. ઉખા વાહકતા અંકનો SI એકમ છે.

(A) $\text{J} / \text{m K}$ (B) $\text{N} / \text{m K}$

(C) $\text{W} / \text{m K}$ (D) $\text{m K} / \text{W}$

45. શ્રાવ ધ્વનિની આવૃત્તિ રેન્જમાં હોય છે.

(A) 20 Hz - 10 KHz (B) 20 Hz - 20 KHz

(C) 10 Hz - 10 KHz (D) 10 Hz - 20 KHz

46. શૂન્યવકાશમાં પ્રકાશની ઝડપ હોય છે.

(A) $3 \times 10^5 \text{ m/s}$ (B) $3 \times 10^6 \text{ m/s}$

(C) $3 \times 10^7 \text{ m/s}$ (D) $3 \times 10^8 \text{ m/s}$

47. 20 Hz આવૃત્તિ ધરાવતા તરંગનો આવર્તકાળ થાય.

(A) 0.05 sec (B) 0.5 sec

(C) 5 sec (D) 50 sec

48. લેસર અંત્યત છે.

(A) એક દિશીય (B) કેન્દ્રિત

(C) સુસંબંધ અને ઉત્તેજિત (D) ઉપરનાં બધાજ

49. એક સભાગૃહનું કદ 5000 m^3 છે. તેની સપાટીઓ વડે થતું કુલ શોષણ 900 O.W.U. છે. તો પ્રતિધોષ સમય શોધો.

(A) 8.094 (B) 0.729

(C) 0.894 (D) 1.003

50. જો n_1 અને n_2 અનુક્રમે કોર અને કલેડીંગના વકીભવનાંકો હોય તો ઓપ્ટિકલ ફાઈબરનો ન્યુમેરિકલ એપર્ચરનું સૂત્ર છે.

(A) $\sqrt{n_2^2 - n_1^2}$ (B) $\sqrt{n_1^2 - n_2^2}$

(C) $\sqrt{n_2 - n_1}$ (D) $\sqrt{n_1 - n_2}$

41. A big piece of glass is first heated and then is allowed to cool. On cooling down, a crack is developed in it. One of the possible reasons for this is _____.

(A) High melting point (B) Large thermal conductivity
(C) Large specific heat (D) Small thermal conductivity

42. When heat is given to boiling water, the temperature of water _____.
(A) increases (B) decreases
(C) remains constant (D) None of the above

43. 37°C = _____ $^{\circ}\text{F}$.
(A) 98.6 (B) 98.8
(C) 97.6 (D) 96.8

44. The SI Unit of coefficient of thermal conductivity is _____.
(A) $\text{J} / \text{m K}$ (B) $\text{N} / \text{m K}$
(C) $\text{W} / \text{m K}$ (D) $\text{m K} / \text{W}$

45. Audible waves have a frequency range from _____.
(A) 20 Hz - 10 KHz (B) 20 Hz - 20 KHz
(C) 10 Hz - 10 KHz (D) 10 Hz - 20 KHz

46. The speed of light in a vacuum is _____.
(A) $3 \times 10^5 \text{ m/s}$ (B) $3 \times 10^6 \text{ m/s}$
(C) $3 \times 10^7 \text{ m/s}$ (D) $3 \times 10^8 \text{ m/s}$

47. What is the periodic time of a wave having frequency of 20 Hz ?
(A) 0.05 sec (B) 0.5 sec
(C) 5 sec (D) 50 sec

48. LASER is an extremely _____ radiation.
(A) Unidirectional (B) Focused
(C) Coherent and Stimulated (D) All of above

49. A volume of an auditorium is 5000 m^3 . The total absorption by the surfaces is 900 O.W.U. Then calculate reverberation time.
(A) 8.094 (B) 0.729
(C) 0.894 (D) 1.003

50. If n_1 and n_2 are refractive indices of core and cladding resp. Then what is the formula for numerical aperture for optical fiber?
(A) $\sqrt{n_2^2 - n_1^2}$ (B) $\sqrt{n_1^2 - n_2^2}$
(C) $\sqrt{n_2 - n_1}$ (D) $\sqrt{n_1 - n_2}$

SECTION - 2

51. $\frac{d}{dx}(x^e + e^x - e^e) = \dots \dots \dots$

(A) e^x

(B) $ex^e + e^x$

(C) $ex^{e-1} + e^x$

(D) $ex^{e-1} + e^x - e^{e-1}$

52. $\frac{d}{dx} \log(\sin x) = \dots \dots \dots$

(A) $\cot x$

(B) $-\cot x$

(C) $\tan x$

(D) $-\tan x$

53. $\text{Given } x + y = -2 \text{ and } \frac{dy}{dx} = \dots \dots \dots$

(A) 0

(B) 1

(C) 2

(D) -1

54. $\int \frac{1}{e^x} dx = \dots \dots \dots + C$

(A) e^{-x}

(B) $-e^{-x}$

(C) e^x

(D) $-e^x$

55. $\int \frac{3}{5x^4} dx = \dots \dots \dots + C$

(A) $\frac{-3}{5x^3}$

(B) $\frac{-12}{5x^5}$

(C) $\frac{3}{20x^3}$

(D) $\frac{-1}{5x^3}$

56. $\int \frac{4x-10}{x^2-5x+1} dx = \dots \dots \dots + C$

(A) $2\log|2x-5|$

(B) $2\log|x^2-5x+1|$

(C) $\frac{2}{\log|2x-5|}$

(D) $\frac{2}{\log|x^2-5x+1|}$

SECTION - 2

51. $\frac{d}{dx}(x^e + e^x - e^e) = \text{_____}.$

(A) e^x

(B) $ex^e + e^x$

(C) $ex^{e-1} + e^x$

(D) $ex^{e-1} + e^x - e^{e-1}$

52. $\frac{d}{dx} \log(\sin x) = \text{_____}.$

(A) $\cot x$

(B) $-\cot x$

(C) $\tan x$

(D) $-\tan x$

53. If $x + y = -2$ then $\frac{dy}{dx} = \text{_____}.$

(A) 0

(B) 1

(C) 2

(D) -1

54. $\int \frac{1}{e^x} dx = \text{_____} + C$

(A) e^{-x}

(B) $-e^{-x}$

(C) e^x

(D) $-e^x$

55. $\int \frac{3}{5x^4} dx = \text{_____} + C$

(A) $\frac{-3}{5x^3}$

(B) $\frac{-12}{5x^5}$

(C) $\frac{3}{20x^3}$

(D) $\frac{-1}{5x^3}$

56. $\int \frac{4x-10}{x^2-5x+1} dx = \text{_____} + C$

(A) $2 \log|2x-5|$

(B) $2 \log|x^2-5x+1|$

(C) $\frac{2}{\log|2x-5|}$

(D) $\frac{2}{\log|x^2-5x+1|}$

57. $\int_{-\pi}^{\pi} x^2 \sin x \, dx = \dots$

(A) 0 (B) 1
(C) -1 (D) -2π

58. $\frac{\log 125}{\log 5} = \dots$

(A) $\log 125 - \log 5$ (B) $\log 120$
(C) 25 (D) 3

59. $\log 2 + 2 \log 3 = \dots$

(A) $2 \log 6$ (B) $\log 8$
(C) $\log 18$ (D) $\log 12$

60. પ્રથમ પાંચ ઋણ પૂર્ણક સંખ્યાઓનો મધ્યક થાય.

(A) 15 (B) -15
(C) 3 (D) -3

61. $\begin{vmatrix} \tan x & -\cos ex \\ -\sin x & -\cot x \end{vmatrix} = \dots$

(A) 0 (B) -1
(C) -2 (D) -3

62. શ્રેણીક $\begin{bmatrix} 3 & 1 & -2 \\ 1 & 0 & 5 \\ -2 & 5 & 4 \end{bmatrix}$ એ શ્રેણીક છે.

(A) અસામાન્ય (B) સંભિત
(C) વિસંભિત (D) વિકણી

63. યો $A = [3 \ 1 \ 2]$ અને $B = \begin{bmatrix} -5 \\ 0 \\ 4 \end{bmatrix}$ હોય તો $AB = \dots$ થાય.

(A) $[-2 \ 1 \ 6]$ (B) $[-15 \ 0 \ 8]$
(C) $[-7]$ (D) એક પણ નહિં

57. $\int_{-\pi}^{\pi} x^2 \sin x \, dx = \text{_____}.$

(A) 0 (B) 1
(C) -1 (D) -2π

58. $\frac{\log 125}{\log 5} = \text{_____}.$

(A) $\log 125 - \log 5$ (B) $\log 120$
(C) 25 (D) 3

59. $\log 2 + 2\log 3 = \text{_____}.$

(A) $2\log 6$ (B) $\log 8$
(C) $\log 18$ (D) $\log 12$

60. The mean of the first five negative integers is $\text{_____}.$

(A) 15 (B) -15
(C) 3 (D) -3

61. $\begin{vmatrix} \tan x & -\csc x \\ -\sin x & -\cot x \end{vmatrix} = \text{_____}.$

(A) 0 (B) -1
(C) -2 (D) -3

62. The matrix $\begin{bmatrix} 3 & 1 & -2 \\ 1 & 0 & 5 \\ -2 & 5 & 4 \end{bmatrix}$ is a _____ matrix.

(A) Singular (B) Symmetric
(C) Skew - symmetric (D) Diagonal

63. If $A = \begin{bmatrix} 3 & 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} -5 \\ 0 \\ 4 \end{bmatrix}$ then $AB = \text{_____}.$

(A) $[-2 \ 1 \ 6]$ (B) $[-15 \ 0 \ 8]$
(C) [-7] (D) None

64. યોગ્ય માટે $A = \begin{bmatrix} 4 & 5 \\ -2 & -3 \end{bmatrix}$ હોય તો $A^{-1} = \dots \dots \dots$

(A) $\begin{bmatrix} -3 & -5 \\ 2 & 4 \end{bmatrix}$

(B) $\frac{1}{2} \begin{bmatrix} -3 & -5 \\ 2 & 4 \end{bmatrix}$

(C) $-\frac{1}{2} \begin{bmatrix} -4 & -5 \\ -2 & 3 \end{bmatrix}$

(D) $-\frac{1}{2} \begin{bmatrix} -3 & -5 \\ 2 & 4 \end{bmatrix}$

65. $225^\circ = \dots \dots \dots$ રેંડિયન

(A) $\frac{3\pi}{4}$

(B) $\frac{5\pi}{4}$

(C) $\frac{7\pi}{4}$

(D) $\frac{9\pi}{4}$

66. યોગ્ય માટે $\sin \theta = \frac{2}{\sqrt{5}}$ હોય તો $\cot \theta = \dots \dots \dots$

(A) 1

(B) $\frac{1}{2}$

(C) 2

(D) $\frac{1}{\sqrt{5}}$

67. યોગ્ય માટે $\cos(3 + 4x)$ ની મુખ્ય આવત્તમાન = $\dots \dots \dots$

(A) $\frac{\pi}{4}$

(B) $-\frac{\pi}{4}$

(C) $\frac{\pi}{2}$

(D) $-\frac{\pi}{2}$

68. $|\hat{i} - 2\hat{j} - 2\hat{k}| = \dots \dots \dots$

(A) 3

(B) -3

(C) ± 3

(D) 9

64. If $A = \begin{bmatrix} 4 & 5 \\ -2 & -3 \end{bmatrix}$ then $A^{-1} = \underline{\hspace{2cm}}$.

(A) $\begin{bmatrix} -3 & -5 \\ 2 & 4 \end{bmatrix}$

(B) $\frac{1}{2} \begin{bmatrix} -3 & -5 \\ 2 & 4 \end{bmatrix}$

(C) $-\frac{1}{2} \begin{bmatrix} -4 & -5 \\ -2 & 3 \end{bmatrix}$

(D) $-\frac{1}{2} \begin{bmatrix} -3 & -5 \\ 2 & 4 \end{bmatrix}$

65. $225^\circ = \underline{\hspace{2cm}}$ radian.

(A) $\frac{3\pi}{4}$

(B) $\frac{5\pi}{4}$

(C) $\frac{7\pi}{4}$

(D) $\frac{9\pi}{4}$

66. If $\sin \theta = \frac{2}{\sqrt{5}}$ then $\cot \theta = \underline{\hspace{2cm}}$.

(A) 1

(B) $\frac{1}{2}$

(C) 2

(D) $\frac{1}{\sqrt{5}}$

67. Principal period of $\cos(3 + 4x) = \underline{\hspace{2cm}}$.

(A) $\frac{\pi}{4}$

(B) $-\frac{\pi}{4}$

(C) $\frac{\pi}{2}$

(D) $-\frac{\pi}{2}$

68. $|\hat{i} - 2\hat{j} - 2\hat{k}| = \underline{\hspace{2cm}}$.

(A) 3

(B) -3

(C) ± 3

(D) 9

69. $(\hat{i} \times \hat{j}) \circ \hat{k} = \dots \dots \dots$

(A) \hat{i} (B) \hat{k}

(C) 0 (D) 1

70. ગે રેખાઓ $x - 2y = 3$ અને $3y + px - 1 = 0$ પરસ્પર લંબ હોય તો $p = \dots \dots \dots$ થાય.

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

(C) 6 (D) -6

71. ગે $(x + 3)^2 + y^2 - 2 = 0$ નું કેન્દ્ર \dots \dots \dots હૈ.

(A) $(3, 0)$ (B) $(0, 3)$

(C) $(-3, 0)$ (D) $(0, -3)$

72. ગે $f(x) = e^{\log x}$ હોય તો $f(1) = \dots \dots \dots$

(A) 0 (B) 1

(C) e (D) $-e$

73. $\lim_{x \rightarrow 0} \frac{\sin 2x}{\tan x} = \dots \dots \dots$

(A) 1 (B) $\frac{1}{2}$

(C) 2 (D) 3

74. $\lim_{n \rightarrow \infty} \left(1 + \frac{5}{2n}\right)^{8n} = \dots \dots \dots$

(A) e^{13} (B) e^4

(C) e^{10} (D) e^{20}

75. $\frac{d}{dx} \left(\log 5 + \sin \frac{\pi}{3} \right) = \dots \dots \dots$

(A) 0 (B) $\frac{1}{5} + \cos \frac{\pi}{3}$

(C) $\frac{1}{5} - \cos \frac{\pi}{3}$ (D) $\cos \frac{\pi}{3}$

69. $(\hat{i} \times \hat{j}) \circ \hat{k} = \text{_____}.$

(A) \hat{i} (B) \hat{k}

(C) $\mathbf{0}$ (D) 1

70. If the lines $x - 2y = 3$ and $3y + px - 1 = 0$ are perpendicular to each other then $p = \text{_____}.$

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

(C) 6 (D) -6

71. The centre of the circle $(x + 3)^2 + y^2 - 2 = 0$ is $\text{_____}.$

(A) (3, 0) (B) (0, 3)

(C) (-3, 0) (D) (0, -3)

72. If $f(x) = e^{\log x}$ then $f(1) = \text{_____}.$

(A) 0 (B) 1

(C) e (D) $-e$

73. $\lim_{x \rightarrow 0} \frac{\sin 2x}{\tan x} = \text{_____}.$

(A) 1 (B) $\frac{1}{2}$

(C) 2 (D) 3

74. $\lim_{n \rightarrow \infty} \left(1 + \frac{5}{2n}\right)^{8n} = \text{_____}.$

(A) e^{13} (B) e^4

(C) e^{10} (D) e^{20}

75. $\frac{d}{dx} \left(\log 5 + \sin \frac{\pi}{3} \right) = \text{_____}.$

(A) 0 (B) $\frac{1}{5} + \cos \frac{\pi}{3}$

(C) $\frac{1}{5} - \cos \frac{\pi}{3}$ (D) $\cos \frac{\pi}{3}$

76. The talented singer danced quickly. (Identify the adverb)
(A) talented (B) quickly
(C) danced (D) singer

77. The captain along with ten players _____ arrived at the stadium. (Select the correct option)
(A) has (B) have
(C) is (D) are

78. None of the products _____ up to the mark, so we returned them all. (Select the correct option)
(A) is (B) are
(C) was (D) were

79. There is a church _____ the lake. (Select the correct option)
(A) over (B) on
(C) between (D) above

80. He _____ to the gym every morning before work. (Select the correct option)
(A) goes (B) went
(C) is going (D) go

81. Select the correct spelling.
(A) Fahrenhit (B) Ferrenhit
(C) Fahrenheit (D) Fahrenheat

82. Select the correct spelling.
(A) Inconvenience (B) Inconveninse
(C) Inconvinience (D) Inconviniance

83. Identify the correct sentence.
(A) The criminals arrested by police.
(B) The police are arrested the criminals.
(C) The police were arrested the criminals.
(D) The police arrested the criminals.

84. Identify the correct sentence.
(A) Shreya is tired as she had worked since 7 o'clock.
(B) Shreya is tired as she has been working since 7 o'clock.
(C) Shreya was tired as she has worked since 7 o'clock.
(D) Shreya is tired as she working since 7 o'clock.

85. Identify the correct sentence.

- (A) The father purchased a vividly illustrated children's dictionary for his daughter.
- (B) The father purchased a child's vividly illustrated dictionary for her daughter.
- (C) The father purchased a children's vividly illustrated dictionary for his daughter.
- (D) The father purchased an illustrated child's vivid dictionary for his daughter.

* Read the following passage carefully and answer the questions: (Question No. : 86 to 90)

The ancient stepwell, Chand Baori, descended into the earth like a forgotten dream. Its geometric steps, a thousand precise cuts into the Sandstone, spiraled down towards the emerald depths of the water. The air within its shadowed walls was cool, a welcome respite from the scorching Rajasthani sun. Villagers, their colourful turbans and saris vibrant against the stone, gathered at the upper levels, drawing water in earthen pots. Legends whispered of a hidden chamber deep within the stepwell, a place where the spirits of the desert dwelled, guarding secrets of forgotten Kings.

A traveling musician, his sitar echoing through the vast space, played haunting ragas, his melodies blending with the gentle splash of water. A lone scholar, his spectacles perched on his nose, meticulously studied the intricate carvings on the walls, searching for clues to the stepwell's mysterious origins and the stories etched into its sandstone heart.

86. What was the purpose of the steps in Chand Baori ?

- (A) To provide seating for spectators
- (B) To create a maze for tourists
- (C) To allow access to the water deep below
- (D) To form a decorative pattern

87. The "cool shadowed walls" of the stepwell provide :

- (A) A place for loud celebrations.
- (B) A relief from the desert heat.
- (C) A place for modern art display.
- (D) A site for industrial activity.

88. According to legends, what was hidden deep within the stepwell ?

- (A) A treasure vault
- (B) Sacred water
- (C) A secret passage to the fort
- (D) A chamber of desert spirit

89. The phrase "forgotten dream" used to describe Chand Baori suggests :

- (A) The stepwell's historical significance and potential obscurity.
- (B) The stepwell's modern architectural design.
- (C) The stepwell's role as a tourist attraction.
- (D) The stepwell's frequent use by villagers.

90. What was the scholar searching for in the carvings ?

- (A) Precious gems
- (B) Ancient map of desert
- (C) Clues to stepwell's origin
- (D) Hidden doorways

91. While communicating, the process of understanding the original idea of the message is called _____.
(A) Decoding (B) Feedback
(C) Encoding (D) Transmission

92. _____ is the study of body language and its effect on communication including facial expression, gestures, etc.
(A) Proxemics (B) Chronemics
(C) Paralanguage (D) Kinesics

93. Which of the following is not an example of verbal communication ?
(A) A manager giving instructions to workers orally.
(B) A man shaking hand with a foreigner.
(C) A student writing a letter to the principal.
(D) An oldman reading a news paper.

94. What is common result of socio-cultural barrier to communication ?
(A) Enhanced comprehension. (B) Improved content clarity.
(C) Misinterpretation of intent. (D) Enriched social connection.

95. Factors such as person's emotions, anxiety, stress and fear can form _____ barrier to communication.
(A) Personal Barrier (B) Psychological Barrier
(C) Physical Barrier (D) Neurological Barrier

96. A letter of adjustment is generally written in response to _____.
(A) letter of inquiry (B) request letter
(C) order letter (D) complaint letter

97. Which of the following statement is correct about letter of inquiry ?
(A) written to offer a product.
(B) written to seek details about product or service.
(C) written to start investigation.
(D) written to raise a complaint.

98. Which of the following is an essential part of business letter ?

(A) Executive summary **(B) Identification initials**
(C) Inside address **(D) Carbon copy notation**

99. Which of the following parts is used to take a courteous leave from a letter ?

(A) Greetings **(B) Salutation**
(C) Complimentary close **(D) Enclosure**

100. Give the full form of 'PS' used in letter writing.

(A) Please **(B) Post Service**
(C) Personnel Service **(D) Post Script**

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