

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.  $CaCO_{3(s)} \xrightarrow{\text{ઉષ્મા}} CaO_{(s)} + CO_{2(g)}$ , પ્રક્રિયા કેવા પ્રકારની કહી શકાય ?  
(A) વિસ્થાપન પ્રક્રિયા (B) ઓક્સિડેશન પ્રક્રિયા  
(C) ઉષ્મીય વિઘટન પ્રક્રિયા (D) અવક્ષેપન પ્રક્રિયા
2. લેડ સલ્ફેટનું સુત્ર કયું 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 કયું 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 હાઈડ્રોક્સાઈડની ઝિંક ધાતુ સાથેની પ્રક્રિયા દ્વારા કઈ મુખ્ય નીપજ મળશે ?  
(A)  $NaZnO_2$  (B)  $NaZn_2O$   
(C)  $Na_2ZnO_2$  (D)  $Zn(OH)_2$
5. કેવા પ્રકાશના ઓક્સાઈડને બેઝિક ઓક્સાઈડ કહે છે ?  
(A) અધાત્વીય ઓક્સાઈડ (B) ધાત્વીય ઓક્સાઈડ  
(C) (A) અને (B) બન્ને (D) નિષ્ક્રિય ઓક્સાઈડ
6. નીચેનામાંથી કયું સંયોજન મિલ્ક ઓફ મેગ્નેશિયા તરીકે ઓળખાય છે ?  
(A)  $Mn(OH)_2$  (B)  $Mg(OH)_2$   
(C)  $MgO$  (D)  $Mg(OH)$
7. નીચેનામાંથી વિરંજન (બ્લીચિંગ) પાઉડરનું રાસાયણિક સુત્ર કયું 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) બ્રોમીન
9. નીચેનામાંથી કઈ ધાતુ ઠંડા કે ગરમ પાણી સાથે પ્રક્રિયા કરતી નથી, પરંતુ બાષ્પ સાથે પ્રક્રિયા કરે છે ?  
(A) એલ્યુમિનિયમ (B) લોખંડ  
(C) ઝિંક (D) આપેલ બધાજ
10. નીચેનામાંથી ધાતુઓની પ્રતિક્રિયાત્મકતાનો કયો 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.  $\text{CaCO}_{3(s)} \xrightarrow{\text{heat}} \text{CaO}_{(s)} + \text{CO}_{2(g)}$ , 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)  $\text{Pb}_2\text{SO}_4$  (B)  $\text{Pb}(\text{SO}_4)_2$   
(C)  $\text{PbSO}_4$  (D)  $\text{Pb}_2(\text{SO}_4)_3$
3. Which is the balance equation of  $\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + \text{H}_2$  ?  
(A)  $\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + 2\text{H}_2$  (B)  $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$   
(C)  $2\text{Al} + 3\text{HCl} \rightarrow 2\text{AlCl}_3 + 2\text{H}_2$  (D)  $2\text{Al} + 4\text{HCl} \rightarrow 3\text{AlCl}_3 + 3\text{H}_2$
4. Which main product is obtained by reaction of sodium hydroxide with zinc metal?  
(A)  $\text{NaZnO}_2$  (B)  $\text{NaZn}_2\text{O}$   
(C)  $\text{Na}_2\text{ZnO}_2$  (D)  $\text{Zn}(\text{OH})_2$
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)  $\text{Mn}(\text{OH})_2$  (B)  $\text{Mg}(\text{OH})_2$   
(C)  $\text{MgO}$  (D)  $\text{Mg}(\text{OH})$
7. Which of the following is the chemical formula of bleaching powder?  
(A)  $\text{Ca}(\text{OH})_2$  (B)  $\text{CaOCl}_2$   
(C)  $\text{Ca}_2\text{OCl}$  (D)  $\text{CaCO}_3 \cdot 2\text{H}_2\text{O}$
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)  $\text{Mg} > \text{Al} > \text{Zn} > \text{Fe}$  (B)  $\text{Mg} > \text{Fe} > \text{Zn} > \text{Al}$   
(C)  $\text{Fe} > \text{Zn} > \text{Al} > \text{Mg}$  (D)  $\text{Mg} > \text{Al} > \text{Fe} > \text{Zn}$

11. કમ્પ્યુટરમાં ડેટાના સૌથી નાના એકમને ..... કહેવામાં આવે છે.  
 (A) બાઈટ (B) બીટ  
 (C) નીબલ (D) જીબી
12. કી-બોર્ડ પર *Ctrl + Home* કી દબાવવાથી કર્સર MS-Wordમાં ..... પર જાય છે.  
 (A) ડોક્યુમેન્ટના અંતમાં (B) લાઈનની શરૂઆતમાં  
 (C) પેરેગ્રાફની શરૂઆતમાં (D) ડોક્યુમેન્ટની શરૂઆતમાં
13. HTMLમાં નીચેનામાંથી કઈ લિંકને સંબંધિત (રીલેટીવ) લિંક તરીકે વર્ગીકૃત કરી શકાય ?  
 (A) `<a href = "http://www.blog.com/index.html">`  
 (B) `<a href = "../index.html">`  
 (C) `<a href = "http://index.html">`  
 (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. માર્કોસોફ્ટ પાવરપોઈન્ટ પ્રેઝન્ટેશનના વ્યુ મેનુમાં નીચેનામાંથી કયો વિકલ્પ ખોટો છે ?  
 (A) ટ્રી વ્યુ (B) આઉટલાઈન વ્યુ  
 (C) નોટ્સ પેજ (D) રીડીંગ 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) જીઓ-થર્મલ ઊર્જા (B) હાઈડ્રો થર્મલ ઊર્જા  
 (C) સૌર ઊર્જા (D) તરંગ ઊર્જા
19. .... એ એક ઉપકરણ છે જે સૌર ઊર્જાનું સીધું વીજળીમાં રૂપાંતરિત કરે છે.  
 (A) ફ્યુઅલ સેલ (B) હાઈડ્રોજન સેલ  
 (C) સોલર એરે (D) ફોટોવોલ્ટેઈક સેલ
20. પેરિસ સમજૂતીનો ધ્યેય 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) `<a href = "http://www.blog.com/index.html">`  
 (B) `<a href = "../index.html">`  
 (C) `<a href = "http://index.html">`  
 (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 ત્રુટિ ..... ત્રુટિનું ઉદાહરણ છે.
- (A) વ્યવસ્થિત (B) અવ્યવસ્થિત  
(C) મહત્તમ (D) લઘુત્તમ
23. 1 જુલ = ..... અર્ગ
- (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 દ્રવ્યમાન  $m$  માં પ્રતિશત ત્રુટિ 0.3% અને ત્રિજ્યા  $r$  માં પ્રતિશત ત્રુટિ 0.5% હોય તો ગોળાની ઘનતામાં ..... પ્રતિશત ત્રુટિ હશે.
- (A) 1.8 (B) 1.5  
(C) 1.2 (D) 1.1
26. એક માઈક્રોમિટર સ્ક્રૂનો પેચ 1 mm છે. તેની વર્તુળાકાર માપપટ્ટી 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. રેખિય 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 બાહ્ય 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  $\rho = \frac{m}{V}$ , 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) Kg s / m (B) Kg m / s  
 (C) m s / 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 દ્રવ્યમાન અને  $9.8 \text{ m/s}^2$  પ્રવેગ વાળો પદાર્થ કેટલું બળ ઉત્પન્ન કરે છે ?  
 (A) 9.8 ન્યુટન (B) 98 ન્યુટન  
 (C) 0.98 ન્યુટન (D) 980 ન્યુટન
32. જો 50 kg દ્રવ્યમાન વાળો એક પદાર્થ 2 m ત્રિજ્યા વાળા વર્તુળમાં 60 m/s નો અચળ ઝડપથી ફેરવવામાં આવે તો તેનો કેન્દ્રગામી પ્રવેગ કેટલો થાય ?  
 (A)  $6000 \text{ m/s}^2$  (B)  $3000 \text{ m/s}^2$   
 (C)  $1800 \text{ m/s}^2$  (D)  $1500 \text{ m/s}^2$
33. વિદ્યુત ફલક્સનો SI એકમ ..... છે.  
 (A)  $\text{C}^2/\text{Nm}$  (B)  $\text{Nm/C}$   
 (C)  $\text{Nm/C}^2$  (D)  $\text{Nm}^2/\text{C}$
34. વિદ્યુતક્ષેત્ર રેખાઓ ..... હોય છે.  
 (A) કાલ્પનિક (B) વાસ્તવિક  
 (C) આદર્શ (D) ઉપરમાંથી એકપણ નહિ
35. 1 કુલંબ વીજભારમાં ઇલેક્ટ્રોનની સંખ્યા કેટલી હોય છે?  
 (A)  $6.25 \times 10^{17}$  (B)  $6.25 \times 10^{18}$   
 (C)  $6.25 \times 10^{19}$  (D)  $6.25 \times 10^{20}$
36. કેપેસિટરની બે પ્લેટો વચ્ચે અવાહક પદાર્થ મૂકવામાં આવે તો કેપેસિટરનું કેપેસિટન્સ .....  
 (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) અડધું (B) બમણું  
 (C) ચતુર્થ ભાગ (D) ચાર ગણું
38.  $5 \Omega$ ,  $10 \Omega$  અને  $15 \Omega$  નાં ત્રણ અવરોધોને શ્રેણી જોડાણથી જોડેલા હોય તો તેમનો સમતુલ્ય અવરોધનું મૂલ્ય કેટલું હશે ?  
 (A)  $10 \Omega$  (B)  $30 \Omega$   
 (C)  $20 \Omega$  (D)  $5.5 \Omega$
39. એકમ દ્રવ્યમાન દીઠ પદાર્થની ઉષ્માધારિતાને તે પદાર્થની ..... કહે છે.  
 (A) વિશિષ્ટ ઉષ્મા (B) સાપેક્ષ ઉષ્મા  
 (C)  $C_p$  (D)  $C_v$
40.  $1 \text{ KCal} = \underline{\hspace{2cm}} \text{ J}$ .  
 (A) 4.186 (B) 4186  
 (C) 41.86 (D) 418.6



31. A body having 10 kg mass and  $9.8 \text{ m/s}^2$  acceleration produces how much force ?  
 (A) 9.8 newton (B) 98 newton  
 (C) 0.98 newton (D) 980 newton
32. If an object having mass 50 kg rotated in a circle with a radius of 2 m with a constant speed of 60 m/s then what is the value of centripetal acceleration ?  
 (A)  $6000 \text{ m/s}^2$  (B)  $3000 \text{ m/s}^2$   
 (C)  $1800 \text{ m/s}^2$  (D)  $1500 \text{ m/s}^2$
33. The SI Unit of electric flux is \_\_\_\_\_.  
 (A)  $\text{C}^2/\text{Nm}$  (B)  $\text{Nm}/\text{C}$   
 (C)  $\text{Nm}/\text{C}^2$  (D)  $\text{Nm}^2/\text{C}$
34. The electric field lines are \_\_\_\_\_.  
 (A) Imaginary (B) Real  
 (C) Ideal (D) None of the above
35. How many electrons are in 1 coulomb charge ?  
 (A)  $6.25 \times 10^{17}$  (B)  $6.25 \times 10^{18}$   
 (C)  $6.25 \times 10^{19}$  (D)  $6.25 \times 10^{20}$
36. The capacitance of a capacitor \_\_\_\_\_ if an insulating dielectric material is placed between two plates of it.  
 (A) increases (B) decreases  
 (C) remains constant (D) becomes zero
37. If the distance between two charges is doubled then electric force between them becomes \_\_\_\_\_.  
 (A) half (B) double  
 (C) one fourth (D) four times
38. What is the effective value of resistance when three resistors  $5 \Omega$ ,  $10 \Omega$  and  $15 \Omega$  are connected in series combination?  
 (A)  $10 \Omega$  (B)  $30 \Omega$   
 (C)  $20 \Omega$  (D)  $5.5 \Omega$
39. Heat capacity of a body per unit mass is known as \_\_\_\_\_.  
 (A) Specific heat (B) Relative heat  
 (C)  $C_p$  (D)  $C_v$
40. 1 KCal = \_\_\_\_\_ J.  
 (A) 4.186 (B) 4186  
 (C) 41.86 (D) 418.6

41. કાચના મોટા ટૂકડાને પહેલાં ગરમ કરીને પછી તેને ઠંડો પડવા દેવામાં આવે ત્યારે ઠંડો થયા પછી તેમાં એક તિરાડ પડે છે. આનું એક સંભવિત કારણ ..... છે.
- (A) ઉચ્ચ ગલનબિંદુ (B) ઉચ્ચ ઉષ્માવાહકતા  
(C) ઉચ્ચ વિશિષ્ટ ઉષ્મા (D) ઓછી ઉષ્માવાહકતા
42. જ્યારે ઉકળેલા પાણીને ઉષ્મા આપવામાં આવે છે. ત્યારે પાણીનું તાપમાન ..... છે.
- (A) વધે (B) ઘટે  
(C) અચળ રહે (D) ઉપરનામાંથી એકપણ નહિ
43.  $37^{\circ}\text{C} = \underline{\hspace{2cm}}^{\circ}\text{F}$ .
- (A) 98.6 (B) 98.8  
(C) 97.6 (D) 96.8
44. ઉષ્મા વાહકતા અંકનો SI એકમ ..... છે.
- (A) J / m K (B) N / m K  
(C) W / m K (D) m K / W
45. શ્રાવ્ય 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)  $3 \times 10^5$  m/s (B)  $3 \times 10^6$  m/s  
(C)  $3 \times 10^7$  m/s (D)  $3 \times 10^8$  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) સુસંબદ્ધ અને ઉત્તેજિત (D) ઉપરનાં બધાજ
49. એક સભાગૃહનું કદ  $5000 \text{ m}^3$  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 ક્લેડીંગના વક્રીભવનાંકો હોય તો ઓપ્ટિકલ ફાઈબરનો ન્યુમેરિકલ એપરચરનું 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.  $37^{\circ}\text{C} = \text{_____}^{\circ}\text{F}$ .  
 (A) 98.6 (B) 98.8  
 (C) 97.6 (D) 96.8
44. The SI Unit of coefficient of thermal conductivity is \_\_\_\_\_.  
 (A) J / m K (B) N / m K  
 (C) W / m K (D) m K / 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)  $3 \times 10^5$  m/s (B)  $3 \times 10^6$  m/s  
 (C)  $3 \times 10^7$  m/s (D)  $3 \times 10^8$  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  $5000 \text{ m}^3$ . 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. If  $x + y = -2$  then  $\frac{dy}{dx} = \dots\dots\dots$

(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.  $\frac{d}{dx}(x^e + e^x - e^e) = \underline{\hspace{2cm}}.$

(A)  $e^x$

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

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

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

52.  $\frac{d}{dx} \log(\sin x) = \underline{\hspace{2cm}}.$

(A)  $\cot x$

(B)  $-\cot x$

(C)  $\tan x$

(D)  $-\tan x$

53. If  $x + y = -2$  then  $\frac{dy}{dx} = \underline{\hspace{2cm}}.$

(A) 0

(B) 1

(C) 2

(D) -1

54.  $\int \frac{1}{e^x} dx = \underline{\hspace{2cm}} + C$

(A)  $e^{-x}$

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

(C)  $e^x$

(D)  $-e^x$

55.  $\int \frac{3}{5x^4} dx = \underline{\hspace{2cm}} + C$

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

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

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

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

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

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

- (A) 0 (B) 1  
(C) -1 (D)  $-2\pi$

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

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

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

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

60. પ્રથમ પાંચ ઋણ પૂર્ણાંક સંખ્યાઓનો મધ્યક ..... થાય.

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

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

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

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

- (A) અસામાન્ય (B) સંમિત  
(C) વિસંમિત (D) વિકર્ણ

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

- (A)  $\begin{bmatrix} -2 & 1 & 6 \end{bmatrix}$  (B)  $\begin{bmatrix} -15 & 0 & 8 \end{bmatrix}$   
(C)  $\begin{bmatrix} -7 \end{bmatrix}$  (D) એક પણ નહિં

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

(A) 0

(B) 1

(C) -1

(D)  $-2\pi$

58.  $\frac{\log 125}{\log 5} = \underline{\hspace{2cm}}.$

(A)  $\log 125 - \log 5$

(B)  $\log 120$

(C) 25

(D) 3

59.  $\log 2 + 2\log 3 = \underline{\hspace{2cm}}.$

(A)  $2\log 6$

(B)  $\log 8$

(C)  $\log 18$

(D)  $\log 12$

60. The mean of the first five negative integers is  $\underline{\hspace{2cm}}.$

(A) 15

(B) -15

(C) 3

(D) -3

61.  $\begin{vmatrix} \tan x & -\operatorname{cosec} x \\ -\sin x & -\cot x \end{vmatrix} = \underline{\hspace{2cm}}.$

(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  $\underline{\hspace{2cm}}$  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  $AB = \underline{\hspace{2cm}}.$

(A)  $\begin{bmatrix} -2 & 1 & 6 \end{bmatrix}$

(B)  $\begin{bmatrix} -15 & 0 & 8 \end{bmatrix}$

(C)  $\begin{bmatrix} -7 \end{bmatrix}$

(D) None

64. જો  $A = \begin{bmatrix} 4 & 5 \\ -2 & -3 \end{bmatrix}$  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.  $225^\circ = \dots\dots\dots$  રેડિયન

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

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

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

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

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

(A) 1

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

(C) 2

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

67.  $\cos(3 + 4x)$  નો મુખ્ય આવર્તમાન =  $\dots\dots\dots$

(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)  $\pm 3$

(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)  $\pm 3$

(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. જો 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. વર્તુળ  $(x + 3)^2 + y^2 - 2 = 0$  નું કેન્દ્ર  $\dots\dots\dots$  છે.

(A) (3, 0)

(B) (0, 3)

(C) (-3, 0)

(D) (0, -3)

72. જો  $f(x) = e^{\log x}$  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.  $(\hat{i} \times \hat{j}) \circ \hat{k} = \underline{\hspace{2cm}}$ .
- (A)  $\hat{i}$  (B)  $\hat{k}$   
(C) 0 (D) 1
70. If the lines  $x - 2y = 3$  and  $3y + px - 1 = 0$  are perpendicular to each other then  $p = \underline{\hspace{2cm}}$ .
- (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  $\underline{\hspace{2cm}}$ .
- (A) (3, 0) (B) (0, 3)  
(C) (-3, 0) (D) (0, -3)
72. If  $f(x) = e^{\log x}$  then  $f(1) = \underline{\hspace{2cm}}$ .
- (A) 0 (B) 1  
(C)  $e$  (D)  $-e$
73.  $\lim_{x \rightarrow 0} \frac{\sin 2x}{\tan x} = \underline{\hspace{2cm}}$ .
- (A) 1 (B)  $\frac{1}{2}$   
(C) 2 (D) 3
74.  $\lim_{n \rightarrow \infty} \left(1 + \frac{5}{2n}\right)^{8n} = \underline{\hspace{2cm}}$ .
- (A)  $e^{13}$  (B)  $e^4$   
(C)  $e^{10}$  (D)  $e^{20}$
75.  $\frac{d}{dx} \left( \log 5 + \sin \frac{\pi}{3} \right) = \underline{\hspace{2cm}}$ .
- (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) Inconviniene (D) Inconviniace
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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