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Solved Paper

- **Jawahar Navodaya School Entrance Exam (Class-IXth) Solved Paper 2022**
Exam. Date : 09-04-2022 (1st Shift) 1-9



Scan QR Code For Jawahar Navodaya School Class 9th 2022 Solved Paper Video Solutions

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अध्याय 1

Section-A : हिन्दी

वर्ण विचार व वर्तनी विवेक

1. हिन्दी वर्णमाला

व्याकरण (वि + आ + करण) का अर्थ विशेष रूप से आख्यान करना होता है। 'व्याकरण' को किसी भाषा के लिखित और बोल-चाल के रूपों का यथार्थतः समझाने वाला शास्त्र कहते हैं। इसमें शब्दों के शुद्ध रूप और प्रयोग के नियमों का निरूपण होता है।

मनुष्य अपने भावों, विचारों को अभिव्यक्त करने के लिए भाषा का प्रयोग करता है। भाषा की सबसे छोटी इकाई को ध्वनि या वर्ण कहते हैं।

वर्णमाला में वर्णों के व्यवस्थित समूह को **वर्णमाला** कहते हैं।

हिन्दी वर्णमाला में उच्चारण के आधार पर वर्णों की संख्या 45 होती है। जबकि वर्णमाला में कुल 52 अक्षर हैं। यह देवनागरी लिपि की वर्णमाला है।

वर्णमाला

अ	आ	इ	ई	उ	ऊ
ए	ऐ	ओ	औ	ऋ	
क	ख	ग	घ	ङ	
च	छ	ज	झ	ञ	
ट	ठ	ड (ड़)	ढ (ढ़)	ण	
त	थ	द	ध	न	
प	फ	ब	भ	म	
य	र	ल	व	श	
ष	स	ह			

नोट : अनुस्वार अं विसर्ग — अः।

द्विगुण व्यंजन—ड़ और ढ़। या उल्क्षिप्त व्यंजन।

I. स्वर

जिन वर्णों का उच्चारण करने में श्वास मुख से कंठ, तालु आदि स्थानों से बिना किसी बाधा के निकलती हो स्वर कहलाता है। अर्थात् स्वतन्त्र रूप से बोले जाने वाले वर्ण 'स्वर' कहलाते हैं।

स्वर: अ, आ, इ, ई, उ, ऊ, (ऋ), ए, ऐ, ओ, औ

अनुस्वार : अं

विसर्ग: अः

II. व्यंजन

जिन वर्णों का उच्चारण करते समय श्वास मुख के कंठ, तालु आदि स्थानों से अबाध गति से नहीं निकलती हो, बल्कि उसमें अवरोध होता हो उसे व्यंजन कहते हैं। अर्थात् जिन ध्वनियों के उच्चारण में स्वरों की सहायता ली जाती है उन्हें व्यंजन कहते हैं।

स्पर्श व्यंजन—जिन व्यंजनों के उच्चारण में जिह्वा का कोई-न-कोई भाग मुख के किसी-न-किसी भाग से स्पर्श करता है, स्पर्श व्यंजन कहलाते हैं। 'क' से लेकर 'म' तक 25 व्यंजन स्पर्श हैं। इन्हें पाँच-पाँच के वर्णों में विभाजित किया गया है—

- क वर्ग — क ख ग घ ङ (कण्ठ्य व्यंजन)
- च वर्ग — च छ ज झ ञ (तालव्य व्यंजन)
- ट वर्ग — ट ठ ड ढ ण ङ (मूर्धन्य व्यंजन)
- त वर्ग — त थ द ध न (दन्त्य व्यंजन)
- प वर्ग — प फ ब भ म (ओष्ठ्य व्यंजन)

(i) **अंतस्थ व्यंजन**—वे वर्ण जिनके उच्चारण में वायु मुख में घुमड़कर बाहर निकलती है, अंतस्थ व्यंजन कहलाते हैं। ये कुल चार हैं, जैसे—(य, र, ल, व)

(ii) **ऊष्म व्यंजन**—वे वर्ण जिनके उच्चारण में वायु घर्षण करती हुई बाहर निकलती है, ऊष्म व्यंजन कहलाते हैं। ये कुल चार हैं, जैसे—श्, ष, स्, ह।

(iii) **उल्क्षिप्त व्यंजन**—जिन व्यंजनों के उच्चारण में जिह्वा की उल्टी हुई नोक तालु को छूकर झटके से हट जाती है, उन्हें उल्क्षिप्त व्यंजन कहते हैं। ङ, ढ़ उल्क्षिप्त व्यंजन हैं।

(iv) **संयुक्त व्यंजन**—वे वर्ण जो दो व्यंजन के मेल से बने हैं, संयुक्त व्यंजन कहलाते हैं। ये कुल चार हैं, जैसे—

क्ष = क् + ष (K-SH)

त्र = त् + र (T-RA)

ज्ञ = ज् + ञ (J-YN)

श्र = श् + र (SH-R)

(v) **कण्ठ्य व्यंजन**—जिन व्यंजन ध्वनियों के उच्चारण में जिह्वा के पिछले भाग से तालु का स्पर्श होता है, उसे कण्ठ्य ध्वनियाँ कहते हैं।

(vi) **तालव्य व्यंजन**—जिन व्यंजनों के उच्चारण में जिह्वा का अग्र भाग तालु को स्पर्श करता है, तालव्य व्यंजन कहलाते हैं।

(vii) **मूर्धन्य व्यंजन**—तालु के मध्य भाग को मूर्द्धा कहते हैं। जिह्वा के निचले भाग के मूर्द्धा को स्पर्श करने पर जो ध्वनि उत्पन्न होती है उन्हें मूर्धन्य व्यंजन कहते हैं।

(viii) **दन्त्य व्यंजन**—जिन व्यंजनों के उच्चारण में जिह्वा की नोक ऊपरी दाँतों को स्पर्श करती है, उन्हें दन्त्य व्यंजन कहते हैं।

(ix) **ओष्ठ्य व्यंजन**—जिन व्यंजनों के उच्चारण में दोनों ओष्ठों द्वारा श्वास का अवरोध होता है, ओष्ठ्य व्यंजन कहलाते हैं।

2. वर्तनी सम्बन्धी अशुद्धियाँ

हिन्दी भाषा में, उच्चारण का विशेष महत्त्व होता है, क्योंकि हिन्दी एक ध्वन्यात्मक भाषा है। यह जिस प्रकार बोली जाती है, उसी तरह लिखी जाती है। यदि हमारा उच्चारण अशुद्ध है, तो उसे लिखा भी अशुद्ध ही जाएगा। भाषा की सुन्दरता उसके गठन और उच्चारण की शुद्धता पर निर्भर करती है। हिन्दी भाषा में वर्तनी सम्बन्धी विभिन्न प्रकार की अशुद्धियाँ होती हैं—

- I. स्वर एवं मात्रा सम्बन्धी अशुद्धियाँ
- II. अनुस्वार एवं चन्द्र बिन्दु सम्बन्धी अशुद्धियाँ
- III. हलन्त सम्बन्धी अशुद्धियाँ
- IV. सन्धि सम्बन्धी अशुद्धियाँ
- V. विसर्ग (:) सम्बन्धी अशुद्धियाँ
- VI. उच्चारण सम्बन्धी अशुद्धियाँ

I. स्वर एवं मात्रा सम्बन्धी अशुद्धियाँ

अशुद्ध	शुद्ध
अनाधिकार	अनधिकार
अहार	आहार
तिथी	तिथि
सुक्ति	सूक्ति
रितु	ऋतु
कोरव	कौरव
आधीन	अधीन
करय	क्रय
कवियत्री	कवयित्री
कन्हेया	कन्हैया
कर्तव्यापालन	कर्तव्य-पालन
इश्वर	ईश्वर
उद्धरड़	उद्धरण
गृहीणी	गृहिणी
नारि	नारी
गरूण	गरुड
गोपनिय	गोपनीय
गर्मियों	गर्मियों
चिहन	चिह्न
छत्री	क्षत्रिय
छुधा	क्षुधा
ज्योत्सना	ज्योत्स्ना
तिलांजली	तिलांजलि
दूरात्मागण	दुरात्मगण
हनूमान	हनुमान
मन्त्रीमण्डल	मन्त्रिमण्डल
योधा	योद्धा

II. अनुस्वार एवं चन्द्र बिन्दु सम्बन्धी अशुद्धियाँ

अशुद्ध	शुद्ध
हालांकि	हालाँकि
बांह	बाँह
गांधी	गाँधी
गांव	गाँव
चन्चल	चंचल
सन्यास	संन्यास
कन्ठ	कंठ
व्यन्जन	व्यंजन

III. हलन्त सम्बन्धी अशुद्धियाँ

अशुद्ध	शुद्ध
अकस्मात	अकस्मात्
भविष्यत	भविष्यत्
दृष्यमान	दृश्यमान्
च्युत	च्युत्
पृथक	पृथक्

IV. सन्धि सम्बन्धी अशुद्धियाँ

अशुद्ध	शुद्ध
इतिपूर्व	इतःपूर्व
निरूपम	निरूपम
बाडगमय	वाडमय
पुष्पवली	पुष्पावली
उपरोक्त	उपर्युक्त
अत्याक्ति	अत्युक्ति
जगतनाथ	जगन्नाथ

V. विसर्ग (:) सम्बन्धी अशुद्धियाँ

अशुद्ध	शुद्ध
प्राय	प्रायः
दुख	दुःख
निस्वार्थ	निःस्वार्थ
प्रातकाल	प्रातःकाल
मनस्थिति	मनःस्थिति
निशुल्क	निःशुल्क

VI. उच्चारण सम्बन्धी अशुद्धियाँ

अशुद्ध	शुद्ध
'ऋ', 'र' संबंधी अशुद्धियाँ	
रितु	ऋतु
व्रक्ष	वृक्ष
श्रृंगार/श्रंगार	शृंगार
श्रगाल/शृगाल	शृगाल
ग्रहस्थी	गृहस्थी
उरिण	उष्ण
आदरित	आदृत
रिषि	ऋषि
'ए', 'ऐ' संबंधी अशुद्धियाँ	
सैना	सेना
एश्वर्य	ऐश्वर्य
एनक	ऐनक
'ओ', 'औ' संबंधी अशुद्धियाँ	
रौशनी	रोशनी
त्यौहार	त्योहार
भोगोलिक	भौगोलिक

अशुद्ध	शुद्ध
बोद्धिक	बौद्धिक
चुनाउ	चुनाव
होले	हौले
'र' संबंधी अशुद्धियाँ	
आशीवाद	आशीर्वाद
कार्यकर्म	कार्यक्रम
आदर्श	आदर्श
नमी	नरमी
'श', 'ष', 'स' संबंधी अशुद्धियाँ	
दुसाशन	दुशासन
प्रसंशा	प्रशंसा
प्रशाद	प्रसाद
कश्ट	कष्ट
अन्य अशुद्धियाँ	
अशुद्ध	शुद्ध
अकाश	आकाश
अतएव	अतएव
रक्शा	रक्षा

जवाहर नवोदय विद्यालय के विगत वर्षों (2007-2021) में पूछे गये प्रश्न

निर्देश (प्रश्न संख्या 1 से 7 तक)

प्रत्येक प्रश्न के लिए चार संभावित उत्तर विकल्प दिए गए हैं, जिनमें से केवल एक सही है। सही उत्तर चुनिए।

1. 'ढ' वर्ण का उच्चारण स्थान है—
 (A) मूर्धन्य (B) दन्त्य
 (C) ओष्ठ्य (D) कंठ्य

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1. (A) 'ढ' वर्ण का उच्चारण स्थान मूर्धन्य है। 'मूर्द्धा' और 'जीभ' के स्पर्श से बोले जाने वाले वर्ण मूर्धन्य कहलाते हैं।
 2. जिस वाक्य में साधारण अथवा मिश्र वाक्यों का मेल रहता है, उस वाक्य को क्या कहते हैं ?
 (A) संयुक्त वाक्य (B) विशेष वाक्य
 (C) मिश्र वाक्य (D) साधारण वाक्य

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2. (A) जिस वाक्य में साधारण अथवा मिश्र वाक्यों का मेल रहता है, उसे संयुक्त वाक्य कहते हैं। संयुक्त वाक्य में दो या

दो से अधिक सरल अथवा मिश्र वाक्य अव्ययों द्वारा जुड़े होते हैं।

3. शुद्ध रूप छाँटिए—
 (A) आशीवाद (B) आशीर्वाद
 (C) आशीर्वाद (D) आशीर्वाद

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3. (C) विकल्प (C) में दिया गया 'आशीर्वाद' शब्द वर्तनी की दृष्टि से शुद्ध है।

4. शुद्ध रूप छाँटिए—
 (A) सहीष्णुता (B) सहिष्णुता
 (C) सहीस्नुता (D) सहिष्णुता

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4. (D) वर्तनी की दृष्टि से सहिष्णुता शुद्ध शब्द है।

5. शुद्ध रूप छाँटिए—
 (A) कृपया (B) किरपा
 (C) कृप्या (D) क्रिप्या

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5. (A) कृपया शुद्ध वर्तनी है। कृपया एक आदरसूचक शब्द है।

6. 'विद्वान्' शब्द का विलोम है—
 (A) निरक्षर (B) साक्षर
 (C) मूर्ख (D) अहंकारी

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6. (C) 'विद्वान्' शब्द का विलोम है— मूर्ख।

7. निम्न में कौन-सा शब्द शुद्ध है?
 (A) अविषकार (B) आविषकार
 (C) आविष्कार (D) अविष्कार

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7. (C) शब्द 'आविष्कार' की वर्तनी सही है।

8. शुद्ध वर्तनी के लिए सही विकल्प छाँटिए—
 (A) अशोभनिय (B) अशोभनीय
 (C) असोभनीय (D) अषोभनीय

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8. (B) शब्द 'अशोभनीय' की वर्तनी शुद्ध है।

9. इनमें से कौन-सा शब्द सही है ?
 (A) प्रादुर्भाव (B) प्रादुर्भाव
 (C) प्रार्भदाव (D) प्रदुर्भाव
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9. (B) शब्द 'प्रादुर्भाव' (प्रकट होना) की वर्तनी सही है।

10. निम्नलिखित में से शुद्ध वर्तनी कौन-सी है ?
 (A) अनजलि (B) अंजली
 (C) अंजलि (D) अजलि
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 (कक्षा IX, 2014)

10. (C) शब्द 'अंजलि' की वर्तनी सही है।

11. निम्नलिखित में से अशुद्ध वर्तनी कौन-सी है ?
 (A) श्याम (B) सम्मान
 (C) सुसमृद्ध (D) स्थिविर
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11. (D) शब्द 'स्थिविर' की वर्तनी अशुद्ध है। सही वर्तनी है—स्थायर अर्थात् स्थायी या स्थिर।

12. निम्नलिखित शब्दों में से किस शब्द की वर्तनी शुद्ध है?

- (A) अधीवेशन (B) अधिवेषन
 (C) अधिवेशन (D) अधिवेशन

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12. (C) शब्द 'अधिवेशन' की वर्तनी शुद्ध है।

13. निम्नलिखित में कौन-सा शब्द शुद्ध है?
 (A) पारगम्य (B) पारगमय
 (C) पारोगम्य (D) परिगम्य

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13. (A) शब्द 'पारगम्य' (जिसके पार जाया जा सके) की वर्तनी शुद्ध है।

14. निम्नलिखित में से कौन-सा शब्द शुद्ध है?
 (A) प्रादुर्भाव (B) प्रादुर्भाव
 (C) प्रार्दुर्भाव (D) प्रदुर्भाव

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14. (B) शब्द 'प्रादुर्भाव' (प्रकट होना/उत्पत्ति) की वर्तनी शुद्ध है।

15. निम्न में से कौन-सा शब्द शुद्ध है?
 (A) प्रशस्त (B) प्रशसत
 (C) प्रसस्त (D) प्रशेस्त

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15. (A) 'प्रशस्त' शुद्ध वर्तनी है।

16. निम्न में कौन-सा शब्द अशुद्ध है?
 (A) सार्थक (B) निरुपाय
 (C) जर्जरीत (D) पारगम्य

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16. (C) 'जर्जरीत' अशुद्ध शब्द है।

17. निम्न में कौन-सा शब्द शुद्ध है ?
 (A) आविषकार (B) अविष्कार
 (C) आविष्कार (D) अवषिकार

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17. (C) 'आविष्कार' शुद्ध वर्तनी है।

महत्वपूर्ण अभ्यास प्रश्न

1. क' का उच्चारण स्थान है—
 (A) कण्ठ (B) तालु
 (C) मूर्धा (D) दन्त
2. हिन्दी वर्णमाला में स्वरों की संख्या कितनी है?
 (A) 12 (B) 13
 (C) 11 (D) 14
3. वह वर्ण जिसका उच्चारण तालु से होता है—
 (A) मूर्धन्य वर्ग (B) कण्ठ्य वर्ग
 (C) ओष्ठ्य वर्ग (D) तालव्य वर्ग
4. 'क', 'ग', 'ज', 'फ' ध्वनियाँ किसकी है?
 (A) संस्कृत
 (B) फारसी-अरबी
 (C) अंग्रेजी
 (D) दक्षिणी भाषाओं
5. मूर्धन्य व्यंजन है—
 (A) च छ ज झ (B) त थ द ध
 (C) ट ठ ड ढ ण (D) प फ ब भ
6. 'ऐ' के उच्चारण स्थान का नाम है—
 (A) तालव्य (B) कंठतालव्य
 (C) दंत्य (D) कंठउथ
7. कौन ऊष्म व्यंजन नहीं है?
 (A) श (B) ष
 (C) ग (D) स
8. संयुक्त व्यंजन 'ज' बनता है—

- (A) ग + ज (B) ज् + ज
 (C) ग् + न (D) क् + ग

9. किस क्रमांक में अन्तस्थ व्यंजन है?
 (A) ड, ढ (B) य, व
 (C) ग, घ (D) व, ध

10. 'व' व्यंजन है—

- (A) ऊष्म (B) महाप्राण
 (C) अन्तस्थ (D) अघोष

11. निम्नलिखित में से कौन-सा स्वर नहीं है?

- (A) अ (B) ज
 (C) उ (D) ए

12. इनमें से कौन संयुक्त व्यंजन नहीं है?

- (A) क्ष (B) त्र
 (C) फ (D) ज्ञ

13. किस वर्ण का उच्चारण स्थान कंठ तालु है—

- (A) ओ (B) ऐ
 (C) ह (D) छ

14. निम्नलिखित में से कौन 'ट' वर्ग में नहीं है?

- (A) ठ (B) ढ
 (C) ध (D) ण

15. 'डॉक्टर' शब्द की 'ऑ' ध्वनि किस भाषा से आई है?

- (A) फ्रेंच (B) जर्मन
 (C) रूसी (D) अंग्रेजी

16. निम्नलिखित में से स्पर्श व्यंजन कौन-सा है?

- (A) श (B) ल
 (C) ह (D) छ

17. निम्नलिखित में से ऊष्म ध्वनि है—

- (A) त् (B) र्
 (C) फ् (D) ष्

18. हिन्दी में स्वतन्त्र रूप से बोले जाने वाले अक्षर क्या कहलाते हैं?

- (A) स्वर (B) संयुक्त अक्षर
 (C) व्यंजन (D) क्रिया

19. वर्णमाला में संयुक्त स्वर कौन से हैं?

- (A) अ, आ (B) इ, ई
 (C) ऐ, औ (D) आ, ई

20. 'ऐ' किन दो स्वरों से मिलकर बना है?

- (A) अ + इ (B) अ + उ
 (C) अ + ए (D) अ + ओ

उत्तरमाला

1. (A) 2. (C) 3. (D) 4. (A) 5. (C)
 6. (B) 7. (C) 8. (B) 9. (B) 10. (C)
 11. (B) 12. (C) 13. (B) 14. (C) 15. (D)
 16. (D) 17. (D) 18. (A) 19. (C) 20. (C)



Chapter 1

Section-B : English

Comprehension (Unseen Passage)

JNV Previous Years (2007-2021) Questions

Direction (Q. No. 1 to 3)

Read the following passage carefully and answer the questions.

Passage

It was the height of summer and the school Anil was to join had not yet opened. Having as yet made no friends in Dehradun in the foothills, he wandered about a good deal by himself into the hills and forests that stretched away on all sides of the town.

JNV Entrance Exam (Class IX, 2021)

1. Anil had come to Dehradun to Join a
(A) club (B) job
(C) school (D) college

1. (C) Anil had come to Dehradun to join a school.
(See the first sentence of passage).

2. Dehradun is situated near the :
(A) hills (B) rivers
(C) sea (D) plateau

2. (A) Dehradun is situated near the hills.

3. What was Anil doing in summer ?
(A) Studying (B) Wandering
(C) Travelling (D) Shopping

3. (B) Anil was wandering in summer.

Direction (Q. No. 4 to 6)

Read the following passage carefully and answer the given questions.

Passage

The Aryans were keen hunters and caught lions and hunted boars with dogs. But their favourite sport was racing in chariots drawn by swift horses. After the races, they had open-air dancing and singing. Like other ancient people, they worshipped at first many Gods of the storms. For a long time their chief God was Indra. As centuries passed and the Aryans settled and developed their farming and trade in the conquered lands, the people became divided into four main castes, the Brahmans, the Kshatriyas, the Vaishyas and the Shudras. The duties of these four groups were described in ancient laws called the 'Manu Samhita' or the Laws of Manu.

4. The favourite sport of the Aryans was :
(A) hunting
(B) chariot race
(C) horse race
(D) dancing and singing

JNV Entrance Exam (Class IX, 2020)

4. (B) chariot race was the favourite sport of Aryans.

5. For a long time, the chief God of the Aryans was :
(A) Sun God
(B) The God of Storms
(C) Indra
(D) God of Sky

JNV Entrance Exam (Class IX, 2020)

5. (C) For a long time, the chief God of the Aryans was Indra.

6. Who helped the Aryans in hunting ?
(A) Lions (B) Dogs
(C) Bears (D) Their God

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6. (B) Their dogs helped them in hunting (see the First line)

Direction (Q. No. 7 to 10)

Read the following passage and answer the questions given below it.

Passage

Just as some men like to play football or cricket, so some men like to climb mountains. This is often very difficult to do so, for mountains are not just big hills. Paths are usually very steep. Some mountain sides are straight up and down, so that it may take many hours to climb as little as one hundred feet. There is always the danger that you may fall off and be killed or injured. Men talk about conquering a mountain. It is wonderful feeling to reach the top of a mountain after climbing for hours and may be, even for days. You look down and see the whole country below you. You feel god-like. Two Italian prisoners of war escaped from a prison camp in Kenya during the war escaped from a prison camp in Kenya. They did not try to get back to their own country, for they knew that was impossible. Instead, they climbed to the top of Mount Kenya, and then they came down again and gave themselves up. They had wanted to get that feeling of freedom that one has, after climbing a difficult mountain.

7. Some men like to climb mountains because—
(A) they know the trick of climbing
(B) they don't like to play football or cricket
(C) they want to have wonderful feeling
(D) they like to face danger

JNV Entrance Exam. (Class IX, 2019)

7. (C) because they want to have wonderful feeling.
8. To climb mountains is often difficult because—
(A) mountains are big hills
(B) it consumes more time
(C) prisoners often escape from camps and battle there
(D) paths are steep and uneven

JNV Entrance Exam. (Class IX, 2019)

8. (D) because paths are steep and uneven.
9. Mountaineering is not a very popular sport like football or cricket because—
(A) there are no spectators in this sport
(B) it may take many hours or even days
(C) not many people are prepared to risk their lives
(D) people don't want to enjoy a good-like feeling

JNV Entrance Exam. (Class IX, 2019)

9. (B) because it may take many hours or even days.
10. It is a wonderful feeling It refers to
(A) the steep path (B) the prisoners
(C) the mountain (D) mountaineering

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10. (D) 'Wonderful feeling' refers to 'mountaineering.'

Direction (Q. No. 11 to 15)

Read the passage carefully and choose the best answer to each question out of the four alternatives.

Passage

Chameleons can make their skin colour change, but not because they decide to. The colour changes to help the chameleon avoid its enemies. It is a form of camouflage, a disguise that lets it blend in with its surroundings. The changes are actually determined by environmental factors, such as light and temperature.

Bright sunlight causes the skin to get darken. On cool nights, the colour fades to a creamy colour. The colour also changes when chameleons are excited, angry or afraid. The colour change is rapid and increases when the chameleon is handled, injured, or approached by another chameleon. There are many types of chameleons. Almost half of them are found on the African Island of Madagascar. The others mostly occur in the Sahara desert, with few in Western Asia and Southern Europe. Chameleons live in trees; where they usually eat insects. Very large chameleons may even use their sticky tongues to catch birds.

11. A chameleon's colour changes to help it—
 (A) fly away
 (B) look beautiful
 (C) avoid its enemies
 (D) attract prey

JNV Entrance Exam. (Class IX, 2018)

11. (C) 'avoid its enemies' is correct.

12. Chameleons change colour when they are—
 (A) excited, angry or hungry
 (B) afraid, excited or angry
 (C) angry, excited or happy
 (D) afraid, angry or hungry

JNV Entrance Exam. (Class IX, 2018)

12. (B) Chameleons change colour when they are afraid, excited or angry.

13. The colour changing ability of a chameleon is a form of camouflage which is a—
 (A) colour that fades
 (B) disguise that lets it blend in with its surroundings
 (C) dance done by chameleons
 (D) disease which affects chameleons

JNV Entrance Exam. (Class IX, 2018)

13. (B) See the first para of the passage.

14. The colour changes are determined by—
 (A) light and wind
 (B) light and pressure
 (C) light and temperature
 (D) pressure and temperature

JNV Entrance Exam. (Class IX, 2018)

14. (C) The colour changes are determined by light and temperature.

15. Half of the world's chameleons are found—

- (A) on the Asian Island of Madagascar
 (B) in the Sahara Desert
 (C) on the African Island of Madagascar
 (D) in the continent of Asia

JNV Entrance Exam. (Class IX, 2018)

15. (C) Almost half of them are found on the African island of Madagascar.

Direction (Q. No. 16 to 20)

Read each of the following passage carefully and answer the questions given below it.

Passage

When you buy a car, examine carefully the important features of the model you are considering. Many a buyer of the latest model has got into trouble by buying a car too broad or too long for his garage. Furthermore, a long car is too hard to manage in traffic and too difficult to park. Another feature is the comfort afforded. Are the seats nice and durably upholstered? Is there enough glass to give the driver a good view in all directions, particularly to the rear? It should be remembered that the heavier and the more powerful a car is, the more expensive it will be to operate. High powered motors require expensive high octane petrol. The greater weight means greater tyre wear and enlarged brakes. The old cliché is still true: it is not the initial cost but the upkeep which matters.

16. The writer favours a car with a wide glass areas so that the driver can :
 (A) enjoy the scene outside while driving
 (B) have a good view of the rear
 (C) roll down the glass panes to get enough fresh air
 (D) display his beautiful upholstery with pride

JNV Entrance Exam. (Class IX, 2017)

16. (B) So that the driver can have a good view of the rear.

17. It is very expensive to maintain a large car because it :
 (A) is heavy
 (B) requires more space for parking
 (C) needs changing its tyres more frequently
 (D) needs more durable upholstery

JNV Entrance Exam. (Class IX, 2017)

17. (C) Because it needs changing its tyres more frequently.

18. While buying a car, one should specially consider its :
 (A) price
 (B) maintenance cost
 (C) upholstery
 (D) brakes

JNV Entrance Exam. (Class IX, 2017)

18. (B) Maintenance cost is correct.

19. According to this passage, the two factors that the buyer of a new car should keep in mind are :
 (A) its price and size
 (B) its model and upholstery
 (C) its size and the comfort it offers
 (D) its upholstery and glass area

JNV Entrance Exam. (Class IX, 2017)

19. (C) The two factors that the buyer of a new car should keep in mind are — its size and the comfort it offers.

20. The size of the car should be in accordance with :

- (A) the money one car afford to pay
 (B) the size of the garage the buyer has
 (C) the width of the road where the buyer lives
 (D) the volume of traffic on road

JNV Entrance Exam. (Class IX, 2017)

20. (B) The size of the car should be in accordance with the size of the garage the buyer has.

Direction (Q. No. 21 to 25)

Read the following passage carefully. Answer the questions given below the passage. Choose the appropriate alternatives out of (A), (B), (C) and (D).

Passage

One of the most famous monuments in the world, the Statue of Liberty was presented to the United States of America by the people of France. The great statue which was designed by the sculptor Auguste Bartholdi, took ten years to complete. The actual figure was made of copper supported by a metal framework which had been specially constructed by Eiffel. Before it could be transported to the United States, a site had to be found for it and a pedestal had to be built. The site chosen was an island at the entrance of the New York harbour. By 1884, a statue which was 151 feet tall had been erected in Paris. The following year, it was taken to pieces and sent to America. By the end of October 1886, the statue had been put together again and it was officially presented to the American people by Bartholdi. Ever since then, the great monument had been a symbol of liberty for the millions of people who have passed through New York harbour to make their homes in America.

21. The Statue of Liberty was presented to America by :

- (A) Eiffel
 (B) the people of England
 (C) the people of France
 (D) the people who made their homes in America

JNV Entrance Exam. (Class IX, 2016)

21. (C) The Statue of liberty was presented to America by the people of France.

22. The great statue which took ten years to complete was designed by :

- (A) Bartholdi
 (B) Lutian
 (C) Eiffel
 (D) A group of sculptors

JNV Entrance Exam. (Class IX, 2016)

22. (A) Bartholdi see the second sentence of the passage.
23. The great statue was taken to pieces because:
- (A) it needed a pedestal
(B) it was not complete
(C) it was 151 feet tall
(D) it was a monument
- JNV Entrance Exam. (Class IX, 2016)**

23. (C) because it was 151 feet tall.
24. What was the site for the great monument to be installed?
- (A) At Atlanta
(B) At the bank of Amazon
(C) Washington D.C.
(D) New York harbour
- JNV Entrance Exam. (Class IX, 2016)**

24. (D) The site for the great monument to be installed was New York harbour'.
25. Since October, 1886 it had been a symbol of:
- (A) sculptor (B) liberty
(C) fraternity (D) honesty
- JNV Entrance Exam. (Class IX, 2016)**

25. (B) Since October, 1886 it had been a symbol of liberty.

Direction (Q. No. 26 to 30)

Read the following passage carefully and choose the best answer to each question out of the four alternatives.

Passage

Television can be very helpful to people who carefully choose the show that they watch. It can increase our knowledge of the outside world. On the other hand, there are several serious disadvantages of television. In some countries, people watch the 'boot-tube' for an average of six hours or more a day. Many children stare at television screen for more hours each day than they do anything else including studying and sleeping. Many studies show that people become more violent after certain programmes. The most negative effect of the television might be people's addiction to it.

26. Television can be useful to people
- (A) if they become violent
(B) if they follow only a particular programme
(C) if they get addicted to it
(D) if they carefully choose the shows that they watch
- JNV Entrance Exam. (Class IX, 2015)**

26. (D) If they carefully choose the shows that they watch.

27. What do children of some countries do more than studying and sleeping?
- (A) playing with friends
(B) relaxing at home
(C) watching television
(D) fighting with each other
- JNV Entrance Exam. (Class IX, 2015)**

27. (C) Watching television. See the 8th line of the passage.

28. What do the reports of many studies reveal?
- (A) People are becoming fat always sitting in front of the TV
(B) People are neglecting their work
(C) People become more violent after
(D) People are watching all the programmes
- JNV Entrance Exam. (Class IX, 2015)**

28. (C) The reports of many studies reveals that people become more violent after certain programmes. See the 10-11th lines of the passage.

29. 'Boot-tube' means
- (A) A programme (B) A colour tube
(C) Television (D) Telephone
- JNV Entrance Exam. (Class IX, 2015)**

29. (C) Television is correct.

30. The worst effect of Television is that it
- (A) effects their mind violently
(B) can be very boring
(C) makes people addicted to it
(D) is making people lazy
- JNV Entrance Exam. (Class IX, 2015)**

30. (C) That it makes people addicted to it.

Direction (Q. No. 31 to 34)

Read the following passage carefully. Answer the questions given below the passage. Choose the appropriate alternatives out of (A), (B), (C) and (D).

Passage

A well dressed young man entered a big textile shop one evening. He was able to draw the attention of salesman who thought him rich and likely to make heavy purchases. He was shown the superior varieties of suit-lengths and sarees. But after casually examining them, he kept moving to the next section where readymade goods were being sold and further on to the hosiery section. By then, the salesman had begun to doubt his intentions and drew the attention of the manager. The manager asked him what exactly he wanted and he replied he wanted courteous treatment. He explained that

he had come to the same shop in the morning dressed casually and drawn little attention. His pride was hurt and he wanted to assert himself. He had come in good dress only to get decent treatment, not for getting any textiles. He left without making any purchase.

31. The young man was able to catch the attention of the salesman because
- (A) he called out to the salesman and demanded to be attended to
(B) he was loudly dressed and behaved abominably
(C) he was smartly dressed and goodlooking
(D) he was well dressed and appeared rich
- JNV Entrance Exam. (Class IX, 2014)**

31. (D) because he was well dressed and appeared rich.

32. The salesman showed him the superior variety of goods because
- (A) the youngman had a lot of money and demanded to be shown only the best available
(B) he thought he could sell his less saleable items
(C) he thought that the man was rich and would prefer expensive varieties
(D) he thought that the youngman was a connoisseur of good products
- JNV Entrance Exam. (Class IX, 2014)**

32. (C) because he thought that the man was rich and would prefer expensive varieties

33. The salesman began to doubt the youngman's intention as he:
- (A) kept moving from one section to another and didn't buy anything
(B) continued to look at the displays in the windows and kept asking to be attended to
(C) bought a lot of very expensive things
(D) he looked like a well dressed thief
- JNV Entrance Exam. (Class IX, 2014)**

33. (A) as he kept moving from one section to another and did not buy anything.

34. The moral of the story is that
- (A) one should not estimate ones status by appearance
(B) courtesies should be extended to everyone whether well dressed or not
(C) a customer not matter how rich or poor should be accorded equal treatment

- (D) a rich man doesn't always make the best customer

JNV Entrance Exam. (Class IX, 2014)

34. (D) The moral of the story is that—a rich man doesn't always make the best customer.

Direction (Q. No. 35 to 39)

Read the following passage carefully and answer the questions that follow.

Passage

It is not luck but labour that makes men. Luck, says an American writer, is ever waiting for something to turn up "labour with keen eyes and strong will always turns up" something. Luck lies in bed and wishes the postman would bring him news of a legacy; labour turns out at six and with busy pen and ringing hammer lays the foundation of competence. Luck whines, labour watches. Luck relies on chance, labour on character. Luck slips downwards to self-indulgence; labour strides upwards and aspires to independence. The conviction, therefore, is extending that diligence is the mother of good luck; in other words, that a man's success in life will be proportionate to his efforts, to his industry, to his attention to small things.

35. What is the meaning of the word 'legacy' ?
(A) A sad or disappointing news.
(B) Bankruptcy or misfortune.
(C) Money or property left to someone in a will.
(D) None of the above.

JNV Entrance Exam. (Class IX, 2013)

35. (C) Money or property left to someone in a will.

36. What would be the synonym of the word 'stride' ?

- (A) Retreat (B) March
(C) Delay (D) Wait

JNV Entrance Exam. (Class IX, 2013)

36. (B) 'March' will be the synonym of the word—'stride'.

37. What is the meaning of the proverb 'diligence is the mother of good luck' ?

- (A) If a person is born in a rich and aristocratic family, he is considered lucky.
(B) If one works carefully and constantly, one's chances of being successful will be much greater.
(C) Bravery brings good luck.
(D) None of the above.

JNV Entrance Exam. (Class IX, 2013)

37. (B) The proverb refers—If one works carefully and constantly one's

chances of being successful will be much greater.

38. According to the passage what is the most important thing for success ?

- (A) Hard work
(B) Only luck
(C) Noble parentage
(D) All of the above

JNV Entrance Exam. (Class IX, 2013)

38. (A) The most important thing for success is 'Hard work'.

39. Which word in the passage means 'to complain or express disappointment or unhappiness repeatedly' ?

- (A) Whine (B) Keen
(C) Aspire (D) Hammer

JNV Entrance Exam. (Class IX, 2013)

39. (A) 'Whine' means along high-pitched complaining cry. Option (A) is correct.

Direction (Q. No. 40 to 44)

Read the passage carefully and choose the best answer to each question out of the four alternatives.

Passage

John had never thought much about the origin of wealth or inequalities in life. It was his firm belief that if this world was not good, the next would be good, and this faith sustained him. He was not like some others whom he knew, who would sell their souls to the devil. He always thought of God before doing anything. He lived the life of an honest man. He had not married but did not desire another man's wife. He believed that women weakened men as was described in the story of Samson and Delilah.

40. 'To sell one's soul to the devil' means :
(A) suppressing one's conscience
(B) giving up goodness in exchange for evil
(C) giving up one's honesty for the sake of monetary benefits
(D) to sell oneself to earn livelihood

JNV Entrance Exam. (Class IX, 2012)

40. (C) giving up one's honesty for the sake of monetary benefits.

41. John thought that women weakened men because :

- (A) he thought that women were evil
(B) he believed that a woman was a fancy devil
(C) he thought that a woman would spoil his life
(D) he was convinced that what the story of Samson and Delilah illustrates is correct

JNV Entrance Exam. (Class IX, 2012)

41. (D) he was convinced that what the story of Samson and Delilah illustrates is correct.

42. It was John's belief that :

- (A) one can be happy only by remaining a bachelor
(B) the world is a happy place
(C) there is no other world
(D) one must lead an honest life

JNV Entrance Exam. (Class IX, 2012)

42. (D) one must lead an honest life.

43. By not desiring another man's wife John showed that :

- (A) he wanted to get married
(B) he was a man of principles
(C) he felt sorry for other men
(D) he had no desire for another's wealth

JNV Entrance Exam. (Class IX, 2012)

43. (B) he was a man of principles.

44. From the above passage we understand that John was :

- (A) not highly educated
(B) a man of simple faith
(C) a deeply pessimistic man
(D) a scholar of scriptures

JNV Entrance Exam. (Class IX, 2012)

44. (B) a man of simple faith.

Direction (Q. No. 45 to 49)

In the following questions, you have a brief passage with 5 questions following the passage. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Passage

As the rulers of the planet, humans like to think that it is the large creatures who will emerge victorious from the struggle for survival. However, nature teaches us the opposite : it is often the smallest species which are the toughest and most adaptable. A perfect example is the hummingbird, which is found in the Americas. One species of hummingbird known as the bee hummingbird ranks as the world's smallest and lightest bird and it is barely visible when it is in flight. Hummingbirds are the only birds that can fly backwards. They feed mainly on the nectar of flowers, a liquid that is rich in energy. Nectar is an ideal food source, for hummingbirds need an incredible amount of energy to sustain their body metabolism. A hummingbird's wings flap at a rate of about 80 times per second and its any heart beats more than 1000 per minute. This is why they must consume relatively large quantities of food. In the course of a day, a hummingbird consumes about half its body weight in nectar.

45. Which of the following statements about the bee hummingbird is true ?
 (A) It could fly high beyond the clouds.
 (B) It cannot be seen when it is in flight.
 (C) It is obviously visible when it flies.
 (D) It escapes our sight when it is in flight.

JNV Entrance Exam. (Class IX, 2011)

45. (B) It cannot be seen when it is in flight.
46. Hummingbirds need a lot of energy in order to :
 (A) sustain a steady rhythm of heart-beat.
 (B) win in the struggle for survival.
 (C) maintain their body metabolism.
 (D) flap their wings and fly backwards.

JNV Entrance Exam. (Class IX, 2011)

46. (C) maintain their body metabolism
47. The hummingbirds are exclusive in the sense that :
 (A) they consume half their body weight every day
 (B) they can fly backwards
 (C) they subsist only on nectar
 (D) their pulse rate is more than 1000 per minute

JNV Entrance Exam. (Class IX, 2011)

47. (B) they can fly backwards
48. The word 'incredible' in the passage means :
 (A) unbelievable (B) phenomenal
 (C) tremendous (D) inexhaustible

JNV Entrance Exam. (Class IX, 2011)

48. (C) tremendous
49. Nature has made man realize the fact that :
 (A) humans who rule the planet are the most powerful beings on Earth.
 (B) the largest and the smallest species are equally tough and strong.
 (C) the large creatures emerge victorious from the struggle for survival.
 (D) the smallest creatures are the toughest and most adaptable.

JNV Entrance Exam. (Class IX, 2011)

49. (D) The smallest creatures are the toughest and most adaptable.

Direction (Q. No. 50 to 54)

In the following questions, you have a brief passage with 5 questions following the passage. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Passage

Earth is the only planet so far known with the suitable environment for sustaining life.

Land, water, air, plants and animals are the major components of the global environment. Population, food and energy are the three fundamental problems facing mankind. Unemployment, inflation, crowding, dwindling resources and pollution are all due to the factors like increasing population, high standard of living, deforestation, etc.

Man has been tampering with the Ecosphere for a very long time and is forced to recognize that environmental resources are scarce. Environmental problems are really social problems. They begin with people as cause and end with people as victims. Unplanned use of resources has resulted in the depletion of fossils, fuels, pollution of air and water, deforestation, which has resulted in ecological imbalance and draining away of national wealth through heavy expenditure on oil and power generation.

50. Increasing population causes :
 (A) unemployment and crowding
 (B) inflation and pollution
 (C) dwindling resources
 (D) unemployment, inflation, crowding, dwindling resources and pollution

JNV Entrance Exam. (Class IX, 2010)

50. (D) Unemployment, inflation, crowding, dwindling resources and pollution
51. National wealth is drained away by spending heavily on :
 (A) power generation
 (B) fuels
 (C) water and power generation
 (D) oil and power generation

JNV Entrance Exam. (Class IX, 2010)

51. (D) oil and power generation
52. The three major components of the global environment are :
 (A) food, energy and population
 (B) high standard of living, crowding and inflation
 (C) land, water and air
 (D) plants, animals and mankind

JNV Entrance Exam. (Class IX, 2010)

52. (C) land, water and air
53. Depletion of fossils and fuels, pollution of air and water and deforestation will never occur in case of :
 (A) improper use of resources
 (B) planned use of resources
 (C) unplanned use of resources
 (D) over use of resources

JNV Entrance Exam. (Class IX, 2010)

53. (B) planned use of resources
54. We face the three fundamental problems that are :
 (A) inflation, deforestation and unemployment
 (B) population, deforestation and energy
 (C) population, inflation and food
 (D) population, food and energy

JNV Entrance Exam. (Class IX, 2010)

54. (D) population, food and energy.

Direction (Q. No. 55 to 59)

Read the passage given below and answer the questions that follow :

Passage

Stamp collecting, has grown into one of the world's most popular hobbies, a science and a business activity. Stamp collecting began immediately after the world saw the first postage stamp in 1840 issued by Great Britain. The bits of coloured paper were curiosity and used specimens were retained by some people. When other countries followed Britain, the idea of exchanging stamps came into existence and collecting them became more interesting. Thus the hobby was born. In 1841, a lady advertised in a London newspaper for used stamps. She wanted to paper her bathroom walls with stamps. She had a collection of about 16000, but wanted more to complete the project. She is considered the world's first stamp collector. The interest spread rapidly and everywhere, men and women began hunting for used stamps of different countries. By 1850, the hobby had taken root. The collection and study of postage stamps is known by the name philately.

55. When did people start collecting stamps ?
JNV Entrance Exam. (Class IX, 2009)

55. People started collecting stamps when they saw first stamp issued by Great Britain in the year 1840.

56. The lady advertised for old stamps because.

JNV Entrance Exam. (Class IX, 2009)

56. The lady advertised for the old stamps because she wanted to paper her bathroom walls with stamps.

57. When did people get the idea of exchanging stamps ?

JNV Entrance Exam. (Class IX, 2009)

57. People got the idea of exchanging stamps when the countries other than Great Britain started issuing stamps.

58. Which word in the passage means 'great desire to know something' ?

JNV Entrance Exam. (Class IX, 2009)

58. Curiosity. (N)

59. What is philately ?

JNV Entrance Exam. (Class IX, 2009)

59. The hobby of collection and study of stamps is known as philately means the collection and study of postage stamps.

Direction (Q. No. 60 to 64)

Read the passage given below and answer the questions that follow.

Passage

Dance is a skillful art. It is practised only by a professional few. Most people dance simply to have fun or to entertain others. But dancing also serves many other purposes. It is an effective means of expression. Facial expressions and hand gestures are the essence of dance. A dancer can express such feeling as joy, anger etc. without saying a word. Throughout human history dances has been used in worship. Pre-historic people probably made up religious dance to gain the favour of their gods. Many Indian tribes danced while appealing for rain and good crops. The present day popularity of dance in India can be judged from the fact that there is hardly any motion picture that does not have half a dozen dances in it.

60. Why do most people dance ?

JNV Entrance Exam. (Class IX, 2008)

60. Most people dance simply to have fun or to entertain others.

61. Two feelings which can be expressed by a dancer without saying a word are

JNV Entrance Exam. (Class IX, 2008)

61. The feelings of joy and anger.

62. Pre-historic people performed religious dances because they wanted

JNV Entrance Exam. (Class IX, 2008)

62. To gain the favour of their gods.

63. In the present times dance has been made popular in India by

JNV Entrance Exam. (Class IX, 2008)

63. Motion pictures.

64. Which word in the passage means movements to express meaning ?

JNV Entrance Exam. (Class IX, 2008)

64. Hand gestures.

Direction (Q. No. 65 to 69)

Read the passage given below and answer the questions that follow :

Passage

Seth Dhanamal had become weak and tired. He was eighty years old. He made up his mind to hand over his business to his three sons. One day he called them to him. He wanted to know if they truly loved him. "I love you more than tongue can tell, more than life itself," said the cunning Mohandas. Dhanamal was pleased. His second son Roshan Lal was as false as his brother Mohandas. He said that he loved his father far better than his brother did. It made Dhanamal very happy. The third son Manasukh was his darling. He thought he would say something more. Manasukh too loved his father dearly. But he loved truth even better. He was ashamed of his selfish brothers. They had spoken falsely. They had made a show of love to get their father's business and wealth. Manasukh said, "I love you as a son ought to love his father." He thus spoke the truth. The wise people know that a man is tested by his deeds not by words. But the old Seth was vain and proud. He had become a little foolish. He

got angry. He asked Manasukh again. He said he truly loved him but he could not speak as his brothers had done. Dhanamal trembled with rage to hear this. He vowed he would give him nothing at all. He then divided his property between Mohandas and Roshan Lal and handed over to them all authority. Honest Manasukh had to leave him. Shortly afterwards the wicked brother began to treat the Seth harshly and cruelly.

65. Who is telling the story ?

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65. It can not be found from the story.

66. What made Seth Dhanamal tremble ?

JNV Entrance Exam. (Class IX, 2007)

66. His younger son manasukh's statements made him tremble.

67. Which of his sons did Seth Dhanamal love most ?

JNV Entrance Exam. (Class IX, 2007)

67. His Younger son Manasukh's was his darling.

68. Why did Seth Dhanamal call all his sons to him ?

JNV Entrance Exam. (Class IX, 2007)]

68. He had decided to hand over his business to them.

69. In the opinion of wise people, a man is tested by ?

JNV Entrance Exam. (Class IX, 2007)

69. In the opinion as wise people, a man is tested by his deeds not by words.

Important Questions

Direction (Q. No. 1 to 52)

In the following questions, you have a brief passage with 5 questions following the passage. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Passage

Earth is the only planet so far known with the suitable environment for sustaining life. Land, water, air, plants and animals are the major components of the global environment. Population, food and energy are the three fundamental problems facing mankind. Unemployment, inflation, crowding, dwindling resources and pollution are all due to the factors like increasing population, high standard of living, deforestation, etc.

Man has been tampering with the Ecosphere for a very long time and is forced to recognize

that environmental resources are scarce. Environmental problems are really social problems. They begin with people as cause and end with people as victims. Unplanned use of resources has resulted in the depletion of fossils, fuels, pollution of air and water, deforestation, which has resulted in ecological imbalance and draining away of national wealth through heavy expenditure on oil and power generation.

1. Increasing population causes :

- (A) unemployment and crowding
- (B) inflation and pollution
- (C) dwindling resources
- (D) unemployment, inflation, crowding, dwindling resources and pollution

2. National wealth is drained away by spending heavily on :

- (A) power generation

(B) fuels

(C) water and power generation

(D) oil and power generation

3. The three major components of the global environment are :

(A) food, energy and population

(B) high standard of living, crowding and inflation

(C) land, water and air

(D) plants, animals and mankind

4. Depletion of fossils and fuels, pollution of air and water and deforestation will never occur in case of :

(A) improper use of resources

(B) planned use of resources

(C) unplanned use of resources

(D) over use of resources

5. We face the three fundamental problems that are :
- (A) inflation, deforestation and unemployment
 - (B) population, deforestation and energy
 - (C) population, inflation and food
 - (D) population, food and energy

Passage

The two dominant features of our age are science and democracy. They have come to stay. We cannot ask educated people to accept the deliverances of faith without rational evidence. Whatever we are called upon to accept must be justified and supported by reason. Otherwise our religious beliefs will be reduced to wishful thinking. Modern man must learn to live with a religion which commends itself to his intellectual conscience, to the spirit of science. Besides, religion should be the sustaining faith of democracy which insists on the intellectual and spiritual development of every human being irrespective of his caste, creed, community, or race. Any religion which divides man from man or supports privileges, exploitation, wars, cannot commend itself to us today.

6. In the passage it is said that democracy :
- (A) should aim at the intellectual growth of all people.
 - (B) should strengthen religion.
 - (C) should work for spiritual development of every human being.
 - (D) both (A) and (C)
7. Which of the following is correct ?
- (A) A good religion supports wars if necessary.
 - (B) A good religion grants a number of privileges to people.
 - (C) A good religion divides man from man.
 - (D) A good religion supports democratic system.
8. The writer of the passage stresses the importance of :
- (A) religion
 - (B) science
 - (C) science and democracy
 - (D) democracy
9. The writer says that :
- (A) Educated people are likely to accept faith not supported by reason.
 - (B) People should have unquestionable faith in religion.
 - (C) Faith and reason are two separate entities.
 - (D) Faith without rational evidence may not be acceptable to the educated people.
10. What, according to the writer, is the role of religion in the present age?
- (A) To promote rational thinking.
 - (B) To inculcate scientific spirit in man.
 - (C) To strengthen faith in democracy.
 - (D) To develop faith in God.

Passage

In 776 BC, the First Olympic Games were held at the foot of Mount Olympus to honour the Greek's chief God Zeus. The Greeks emphasized, physical fitness and strength in their education of youth. Therefore, contests in running, jumping, discus and javelin throwing, boxing and horse and chariot racing were held in individual cities, and the winners competed every four years at Mount Olympus. Winners were greatly honoured by having poems sung about their deeds. Originally, these were held as games of friendship, and any wars in progress were halted to allow the games to take place. The Greeks attached so much importance to these games that they calculated time in four-year cycles called 'Olympiads' dating from 776 BC.

11. Where were the First Olympic Games held?
- (A) Mount Olympus
 - (B) Mount Olympiad
 - (C) Mount Oreles
 - (D) Mount of Greeks
12. Why were the Olympic Games held?
- (A) To stop wars
 - (B) To crown the best athletes
 - (C) To honour Zeus
 - (D) To sing songs about athletes
13. Approximately how many years ago did these games originate ?
- (A) 776 years (B) 2279 years
 - (C) 1207 years (D) 2781 years
14. Which of the following contests was not held ?
- (A) Discus throwing
 - (B) Skating
 - (C) Boxing
 - (D) Running
15. The values connected with Olympic Games were :
- (A) physical fitness, education of youth and friendship
 - (B) health, contests and singing
 - (C) running, jumping, throwing and boxing
 - (D) four-year cycles, war-time, young age and friendship

Passage

As the rulers of the planet, humans like to think that it is the large creatures who will emerge victorious from the struggle for survival. However, nature teaches us the

opposite : it is often the smallest species which are the toughest and most adaptable. A perfect example is the hummingbird, which is found in the Americas. One species of hummingbird known as the bee hummingbird ranks as the world's smallest and lightest bird and it is barely visible when it is in flight.

Hummingbirds are the only birds that can fly backwards. They feed mainly on the nectar of flowers, a liquid that is rich in energy. Nectar is an ideal food source, for hummingbirds need an incredible amount of energy to sustain their body metabolism. A hummingbird's wings flap at a rate of about 80 times per second and its any heart beats more than 1000 per minute. This is why they must consume relatively large quantities of food. In the course of a day, a hummingbird consumes about half its body weight in nectar.

16. Which of the following statements about the bee hummingbird is true ?
- (A) It could fly high beyond the clouds.
 - (B) It cannot be seen when it is in flight.
 - (C) It is obviously visible when it flies.
 - (D) It escapes our sight when it is in flight.
17. Hummingbirds need a lot of energy in order to :
- (A) sustain a steady rhythm of heart-beat.
 - (B) win in the struggle for survival.
 - (C) maintain their body metabolism.
 - (D) flap their wings and fly backwards.
18. The hummingbirds are exclusive in the sense that :
- (A) they consume half their body weight every day
 - (B) they can fly backwards
 - (C) they subsist only on nectar
 - (D) their pulse rate is more than 1000 per minute
19. The word 'incredible' in the passage means :
- (A) unbelievable
 - (B) phenomenal
 - (C) tremendous
 - (D) inexhaustible
20. Nature has made man realize the fact that :
- (A) humans who rule the planet are the most powerful beings on Earth.
 - (B) the largest and the smallest species are equally tough and strong.
 - (C) the large creatures emerge victorious from the struggle for survival.
 - (D) the smallest creatures are the toughest and most adaptable.

Passage

Pablo Picasso showed his truly exceptional talent from a very young age. His first word was lapiz (Spanish for pencil) and I learnt to draw before he could talk. He was the only son in the family and very good-looking, so he was thoroughly spoilt. I hated school and often refused to go unless his doting parents allowed him to take one of his father's pet pigeons with him.

Apart from pigeons, his great love was art and when in 1891 his father, who was an amateur artist, got a job as a drawing teacher a college, Pablo went with him to the college. He often watched his father paint and sometimes was allowed to help. One evening his father was painting a picture of their pigeons when he had to leave the room. He returned to find that Pablo had completed the picture and it was so amazingly beautiful and lifelike that he gave his son his own palette and brushes and never painted against Pablo was just thirteen.

21. As a boy Pablo Picasso was
 - (A) ordinary looking but talented
 - (B) handsome and talented
 - (C) handsome and studious
 - (D) handsome and hardworking
22. He was spoilt mostly because he was
 - (A) a smart boy
 - (B) loved by one and all
 - (C) the only son in the family
 - (D) always surrounded by notorious boys
23. Picasso went to school only when
 - (A) his friends accompanied him
 - (B) his father went with him
 - (C) he was allowed to paint at school
 - (D) he was allowed to carry a pet with him
24. When his father painted in the college, Pablo
 - (A) occasionally helped him
 - (B) rarely helped him
 - (C) always helped him
 - (D) invariably helped him
25. Pablo's father gave up painting because he
 - (A) did not like the job
 - (B) retired from the college
 - (C) was impressed by his son's talent
 - (D) lost interest in painting

Passage

And then Gandhi came. He was like a powerful current of fresh air that made us stretch ourselves and take deep breaths, like a beam of light that pierced the darkness and removed the scales from our eyes, like a whirlwind that upset many things but most of all the working of people's mind. He did not descend from the top; he seemed to emerge from the millions of India, speaking their language and incessantly drawing attention to them and their appalling condition. Get off the backs of these peasants and workers, he told us, all of you who live by their exploitation; get rid of the system that produces this poverty and misery.

26. Gandhi came like a powerful current of fresh air and
 - (A) awakened us to the plight of the masses in the grip of oppressors
 - (B) made us patriotic
 - (C) emboldened us to attack and destroy the oppressors
 - (D) praised our culture
27. The rise of Gandhi
 - (A) shocked people
 - (B) made India powerful
 - (C) made the condemnation of the exploiter final
 - (D) made women feel secure
28. Gandhi fought the
 - (A) rich
 - (B) oppressor
 - (C) apathetic masses
 - (D) unjust system
29. The conspicuous role of Gandhi is that of a
 - (A) father
 - (B) reformer
 - (C) teacher
 - (D) liberator

Passage

Patience is better than wisdom : An ounce of patience is worth a pound of brains. All men praise patience, but few can practise it. It is a medicine which is good for all diseases, but it is not every garden that grows the herbs to make it with. Many people are born crying, live complaining and die disappointed.

They think every other person's burden to be light and their own feathers to be heavy as lead and yet if the truth were known, it is their fancy rather than their fate that makes things go so hard with them. Many would be well off than what they think of.

30. Which of the following is the most suitable explanation to the author's remark that an "ounce of patience is worth a pound of brains" ?
 - (A) Wisdom can only be attained by practising patience
 - (B) Patience comes first, wisdom next
 - (C) Patience is essential for every achievement in life
 - (D) Without patience wisdom cannot be used properly
31. Which one is the most likely explanation, among the following, of the author's metaphorical statement that "it is not every garden that grows the herbs to make it with"?
 - (A) Patience is a must for solving all our problems in life
 - (B) Patience is a rare herb that cures all diseases
 - (C) Patience is virtue of a highest order
 - (D) It is only a small number of people that are found observing patience in life.
32. The writer's remarks, "They think every person's burden to be light and their own feathers to be as heavy as lead" is very significant. It means
 - (A) They are always worried and dejected
 - (B) They consider their own problems to be difficult to solve as compared with problems of other people
 - (C) They feel that they alone face serious problems while others have a nice time
 - (D) They remain very much worried about their own problem.

Answer Key

1. (D) 2. (D) 3. (C) 4. (B) 5. (D)
6. (D) 7. (D) 8. (C) 9. (D) 10. (B)
11. (A) 12. (C) 13. (D) 14. (B) 15. (A)
16. (B) 17. (C) 18. (B) 19. (C) 20. (D)
21. (B) 22. (C) 23. (D) 24. (A) 25. (C)
26. (A) 27. (C) 28. (D) 29. (B) 30. (D)
31. (D) 32. (C)



Chapter 1

Number System

1. IMPORTANT TERMINOLOGY

1.1 Digits—0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 are defined as digits in Mathematics. We can create many numbers by using these digits. For example : 10, 123, 456, 789 etc.

1.2 Number System—There are mainly two types defined in the number system. These are :

I. Decimal Number System—It contains 0 to 9 digits. That's why it is called *decimal number system*. In this system, the numbers is read and written in two ways—Indian number system and International number system.

In the Indian number system or Hindi-Arabic system, the numbers are read and written as per their place values. These numbers are read as per the following table.

Periods	Crores		Lakhs		Thousands		Ones		
Values	10,00,00,000 (Ten Crores)	1,00,00,000 (Crore)	10,00,000 (Ten Lakhs)	1,00,000 (Lakh)	10,000 (Ten Thousands)	1,000 (Thousand)	100 (Hundred)	10 (Ten)	1 (One)
	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0

Example : Number 51,45,42,786 can be read as Fifty-one Crores Forty-five Lakhs Forty-two Thousands Seven Hundred and Eighty-six. It is also called number name.

Unit Conversions :

- 1 tens = 10 units
- 1 Hundred = 10 tens = 100 units
- 1 Thousand = 10 Hundreds = 100 tens = 1000 units
- 1 Lakh = 10 Thousands = 100 Hundreds = 1000 tens
- 1 Crore = 10 Lakhs = 100 Thousands = 1000 Hundreds

In International number system, the numbers are read and written as per the following table.

Periods	Millions			Thousands			Ones		
Values	100,000,000 (Hundred Millions)	10,000,000 (Ten Millions)	10,00,000 (Million)	100,000 (Hundred Thousands)	10,000 (Ten Thousands)	1,000 (Thousand)	100 (Hundred)	10 (Ten)	1 (One)
	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0

Example : Number 14,542,786 can be read as Fourteen Millions Five Hundred Forty-two Thousand Seven Hundred Eighty-six.

II. Roman Number System—In this system, numbers are represented by Latin alphabets. The Roman numerals used in, are based on seven symbols or letters.

Roman System	I	V	X	L	C	D	M
Hindu-Arabic System	1	5	10	50	100	500	1000

Example : 25 can be written as XXV and 101 as CI.

Note

- A letter repeats its value that many times (XXX = 30, CC = 200 etc.). A letter can only be repeated three times.
- If one or more letters are placed after another letter of greater value, add that amount.

For example,

$$VII = 7(5 + 1 + 1); LXI = 61(50 + 10 + 1); MCC = 1200(1000 + 100 + 100)$$

- If a letter is placed before another letter of greater value, subtract that amount.

For example,

$$IV = 4(5 - 1); XIV = 14(10 + 5 - 1); CM = 900(1000 - 100)$$

- Only subtract powers of ten (I, X, or C, but not V or L).
- Only subtract one number from another.
- Do not subtract a number from one that is more than 10 times greater (that is, you can subtract 1 from 10 [IX] but not 1 from 20—there is no such number as IXX.)
- A bar placed on top of a letter or string of letters increases the numeral's value by 1,000 times.

For example, XII = 12 whether \overline{XII} = 12000.

2. DIGITS OF NUMBER

- **Units**—Digit 0 to 9 are called Unit digits. The smallest and the largest number of 1-digit are 0 and 9 respectively.
- **Tens**—The numbers from 10 to 99 are called ten numbers. The smallest and the largest number of 2-digits are 10 and 99 respectively.
- **Hundreds**—The numbers from 100 to 999 are called hundred numbers. The smallest and the largest number of 3-digits are 100 and 999 respectively.

- **Thousands**—The numbers from 1,000 to 9,999 are called thousand numbers. The smallest and the largest number of 4-digits are 1000 and 9999 respectively.
- **Ten thousands**—The numbers from 10,000 to 99,999 are called ten thousand numbers. The smallest and the largest number of 5-digits are 10,000 and 99,999 respectively.
- **Lakhs**—The numbers from 1,00,000 to 9,99,999 are called lakh numbers. The smallest and the largest number of 6-digits are 1,00,000 and 9,99,999 respectively.
- **Ten Lakhs**—The numbers from 10,00,000 to 99,99,999 are called ten lakh numbers. The smallest and the largest number of 7-digits are 10,00,000 and 99,99,999 respectively.
- **Crores**—The numbers from 1,00,00,000 to 9,99,99,999 are called crore numbers. The smallest and the largest number of 8-digits are 1,00,00,000 and 9,99,99,999 respectively.

3. VALUE OF DIGITS

- **Place Value**—Place value helps us determine the value of numbers. Our (base-10) number system contains numerals or digits only from 0 to 9, but we often need to use numbers greater than 9. We show numbers greater than 9 by using place value. Place value refers to the value of each digit in a number.
Example : In a number 489765, place value of 7 will be 7×100 units, *i.e.*, 700. Similarly, the place value of 8 will be $8 \times 10,000 = 80,000$.
- **Face Value**—The actual value of a digit in a number is the digit itself. The place value of the digit is ignored in the number.
Example : In a number 59,438, the face value of 4 is 4, face value of 9 is 9 etc.

Note

If x and y be the tens digit and unit digit respectively, then the 2-digit number formed by these digits will be $10x + y$.

4. COMPARISON OF NUMBERS

- **When both numbers have unequal number of digits**
The number having more digits is greater. It means
..... 5-digit number > 4-digit number > 3-digit number
- Example :** Find out which is greater 5429683 or 65245893 ?
Solution : Since, the first number 5429683 is of 7-digit number whether the second number 65245893 is of 8-digit. Therefore, the second number is greater than the first number.
- **When both numbers have equal number of digits**
In case of the equal number of digits, we have to check the place value of the left-most digit of both numbers. If the digits of both numbers are also equal, then we move to its next digit placed on the right side and repeat the process until we get the desired result.

Example : Arrange the following numbers in ascending order.

5403100, 5460860, 5458087, 5420378

Solution : At first, we check the place value of the leftmost digit of each number. Then repeat the same process until we get the answer. Here, in each number, two leftmost digits are equal. After that, we check ten thousand place values and then arrange the digits in ascending order. Hence, we get

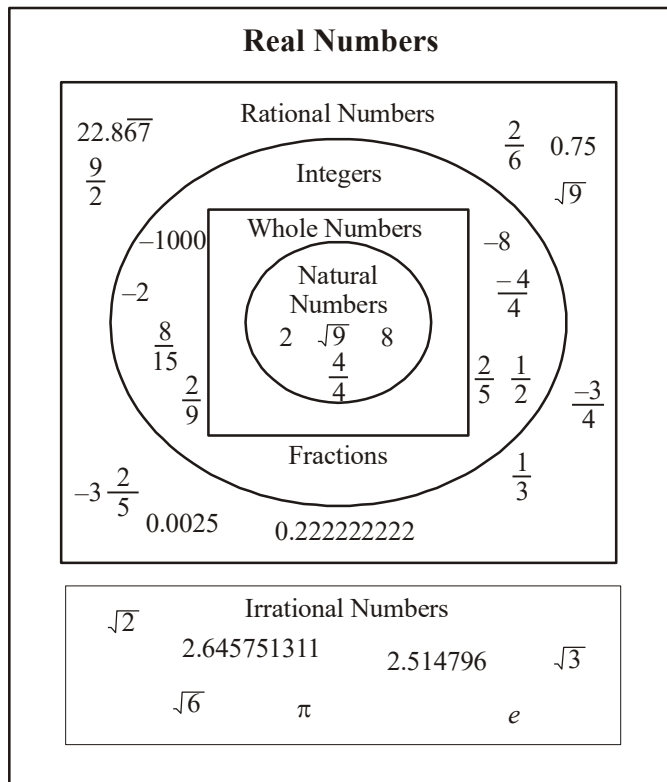
$$5403100 < 5420378 < 5458087 < 5460860$$

5. CLASSIFICATION OF NUMBERS

There are several types of numbers exist in the number system for different purposes. These numbers are classified into different groups according to their properties. These are :

- **Natural Numbers**—Counting numbers starting from 1, 2, 3..., etc. are called natural numbers. It is represented by capital letter **N**. Its set is shown as
$$N = \{1, 2, 3, 4, 5, \dots\}$$
- **Whole Numbers**—All natural numbers along with 0 is known as whole numbers. It is represented by capital letter **W**. Its set is shown as
$$W = \{0, 1, 2, 3, 4, \dots\}$$
- **Even and Odd Numbers**—A number is even if it is a multiple of two, and is odd otherwise. Even numbers are denoted by capital letter **E** and odd numbers are denoted by capital letter **O**.
 $E = \{2, 4, 6, 8, \dots\}$ and $O = \{1, 3, 5, 7, \dots\}$
- **Integers**—Positive and negative counting numbers, as well as zero are called integers. Integers are denoted by capital letter **Z**.
$$Z = \{\dots -3, -2, -1, 0, 1, 2, 3, \dots\}$$
- **Prime Numbers**—An integer with exactly two positive divisors : itself and 1, is called prime number. For example : 2, 3, 5, 7, 11, 13...etc. are few prime numbers. 2 is the smallest prime number.
- **Composite Numbers**—All those numbers greater than 1 that are not prime are called composite numbers. For example : 4, 6, 8, 9, 10 etc. are few composite numbers.
- **Rational Numbers**—Numbers that can be expressed as a ratio of an integer to a non-zero integer. Rational numbers are denoted by capital letter **Q**. All integers are rational, but the converse is not true.
$$Q = \left\{ \dots -\frac{1}{2}, -1, 0, \frac{1}{4}, \frac{1}{2}, \dots \right\}$$
- **Irrational Numbers**—All the real numbers that are not rational are called irrational numbers. Irrational numbers are denoted by **I**.
$$I = \left\{ \dots \frac{2}{3}, \sqrt{2}, \sqrt{3}, \dots \right\}$$

- **Real Numbers**—They can be positive, negative or zero. All rational numbers are real, but the converse is not true.



6. APPROXIMATE VALUES OF NUMBERS

Place values are considered to be the base to find approximation values in numbers. Approximation value of few place values is determined by the following methods.

- **Approximate value nearest tens place**—If the number at units place is less than 5 then it is rounded off to zero otherwise add 1 to the tens place and keeps unit place as zero.
Example: 73 can be rounded off to 70, 156 can be rounded off to 160 and 4265 can be rounded off to 4270.
- **Approximate value nearest hundred place**—If the number at tens place is less than 5 then it is rounded off to zero otherwise add 1 to the hundred place and keeps tens place and unit place as zero.
Example: 510 can be rounded off to 500, 9573 can be rounded off to 9600 and 53650 can be rounded off to 53700.
- **Approximate value nearest thousand place**—If the number at hundred place is less than 5 then it is rounded off to zero otherwise add 1 to the thousand place and keeps hundred place, tens place and unit place as zero.
Example: 6240 can be rounded off to 6000, 17573 can be rounded off to 18000 and 553650 can be rounded off to 554000.

7. DIVISIBILITY TEST OF NUMBERS

- **Divisibility by 2 :**
If the unit digit of a number is any of 0, 2, 4, 6, 8, then the given number is divisible by 2.
Example: 84, 786, 282, 1008, 5000....., etc. are divisible by 2.
- **Divisibility by 3 :**
A number is divisible by 3, if the sum of all digits of the number is divisible by 3.
Example: 786, here $7 + 8 + 6 = 21$ (completely divisible by 3)
So, the number 786 will be divisible by 3.
- **Divisibility by 4 :**
A number is divisible by 4, if the last two-digits of the number is divisible by 4.
Example: 3464, here 64 is the last two-digit number which is divisible by 4.
So, the number 3464 will be divisible by 4.
- **Divisibility by 5 :**
A number is divisible by 5, if the unit digit of the number is either 0 or 5.
Example: 3125, 2010, 2015, 6580....., etc. are divisible by 5.
- **Divisibility by 6 :**
A number is divisible by 6, if the number is divisible by the numbers 2 and 3.
Example: Test whether number 8202 is divisible by 6.
Solution: (i) the unit digit of the number is 2 which is divisible by 2.
(ii) the sum of digits of the number = $8 + 2 + 0 + 2 = 12$ (divisible by 3)
Since, it is clear from (i) and (ii) that the number 8202 is divisible by both 2 and 3. So, the number will be divisible by 6.
- **Divisibility by 7 :**
Take the last digit of the given number and double it. Subtract this number from the rest of the digits in the original number. If this new number is either 0 or if it is a number that is divisible by 7, then the given number is also divisible by 7.
Example: Test whether number 2492 is divisible by 7.
Solution: Here, the unit digit of the number = 2
 $249 - 2 \times 2 = 245$ (divisible by 7). So, the number will be divisible by 7.
- **Divisibility by 8 :**
A number is divisible by 8, if the last three-digits of the number is divisible by 8.
Example: Test whether number 6288 is divisible by 8.

Solution : Here, in the given number, 288 is the last three-digit number which is completely divisible by 8.

So, the number 6288 will be divisible by 8.

● **Divisibility by 9 :**

A number is divisible by 9, if the sum of its digits is divisible by 9.

Example : Test whether number 7074 is divisible by 9.

Solution : Sum of all digits of the number = $7 + 0 + 7 + 4 = 18$ (divisible by 9).

So, the number 7074 will be divisible by 9.

● **Divisibility by 11 :**

A number is divisible by 11, if difference between the sum of digits at odd places and the sum of digits at even places, is divisible by 11.

Example : Test whether number 86460 is divisible by 11.

Solution : Sum of the all digits at even places in the number = $6 + 6 = 12$

Sum of the all digits at odd places in the number = $8 + 4 + 0 = 12$

Their difference = $12 - 12 = 0$. So, the number 86460 will be divisible by 11.

8. DIVISION ALGORITHM

The number which we divide is called the dividend. The number by which we divide is called the divisor. The result obtained is called the quotient. The number left over is called the remainder. Some formula are given below for Division based questions.

● $\text{Dividend} = \text{Divisor} \times \text{Quotient} + \text{Remainder}$

● $\text{Divisor} = \frac{\text{Dividend} - \text{Remainder}}{\text{Quotient}}$

● $\text{Quotient} = \frac{\text{Dividend} - \text{Remainder}}{\text{Divisor}}$

Example : In a question, the divisor is 4 times the quotient and 2 times the remainder. If the remainder is 20, then find the value of dividend.

Solution : According to Question,

$$\begin{aligned} \text{Divisor} &= 2 \times \text{Remainder} = 2 \times 20 = 40 \\ &\dots(1) \end{aligned}$$

And, $\text{Divisor} = 4 \times \text{Quotient}$

$\Rightarrow 4 \times \text{Quotient} = 40$ [from eq.(1)]

$\Rightarrow \text{Quotient} = 40/4 = 10$

$\therefore \text{Dividend} = 40 \times 10 + 20 = 400 + 20 = 420$

9. WHOLE NUMBERS

We start counting from the number 1. Hence 1 is the first natural number and the next natural number is 2 which is obtained by adding 1 to the first number. Hence, numbers are represented in two ways according to their orderliness :

● **Predecessor** —The natural number immediately preceding a natural number is its predecessor.

Example : Predecessor number of 65 = $65 - 1 = 64$

Predecessor number of 127 = $127 - 1 = 126$

● **Successor** —The natural number immediately next to any natural number is its successor.

Example : Successor number of 785 = $785 + 1 = 786$

Successor number of 109 = $109 + 1 = 110$

9.1 Whole Numbers—Natural numbers combine with zeroes to form whole numbers. When operations (addition, subtraction, multiplication, division) are used on whole numbers, many properties are revealed.

9.2 Characteristics of Whole Numbers

- All properties of natural numbers are true for the whole numbers.
- The smallest whole number is '0' (zero).

9.3 Properties of Whole Numbers

I. Closure property – If a and b be two whole numbers, then $a + b$ and $a * b$ will also be whole numbers.

Example :

- $4 + 5 = 9$, a whole number
- $4 \times 5 = 20$, a whole number
- $4 - 5 = -1$, not a whole number
- $4 \div 5 = 0.8$, not a whole number

Hence, whole numbers don't follow the subtraction and division operations for closure property.

II. Communicative property—Addition and multiplication operations are both communicative for whole numbers.

Example :

- $4 + 5 = 9 = 5 + 4$, a whole number
- $4 \times 5 = 20 = 5 \times 4$, a whole number
- $4 - 5 = -1 \neq 5 - 4 = 1$, not a whole number
- $4 \div 5 = 0.8 \neq 5 \div 4 = 1.25$, not a whole number

Hence, whole numbers don't follow the subtraction and division operations for communicative property.

III. Associative property—Addition and multiplication operations are both associative for whole numbers.

Example : $4 + (5 + 6) = 4 + 11 = 15$

$$(4 + 5) + 6 = 9 + 6 = 15$$

$\therefore 4 + (5 + 6) = (4 + 5) + 6$

IV. Distributive property—

$$a \times (b + c) = a \times b + a \times c$$

or $(a + b) \times c = a \times c + b \times c$

Example : $4 \times (5 + 8) = 4 \times 5 + 4 \times 8$

$$4 \times 13 = 20 + 32$$

$$52 = 52$$

It is clear from the example that it is called distribution property of multiplication on addition operation.

V. Identity element—

- **Additive identity**—‘0’ is called additive identity because it is only the element its addition with any number gives the same number.

Example : $5 + 0 = 5$, and $7 + 0 = 7$ etc.

- **Multiplicative identity**—‘1’ is called multiplicative identity because it is only the element its multiplication with any number gives the same number.

Example : $6 \times 1 = 6$, and $7 \times 1 = 7$ etc.

9.4 Integers—The set of all negative numbers and positive numbers on either side of the zero marked on the number line is called an integer.

$-5, -4, -3, -2, -1, 0, 1, 2, 3, 4$, and 5 all are the integers. On the number line, integers are represented as follows :



● Properties of integers

- ❖ **Closure property**—If a and b be two whole numbers, then $a + b$ and $a * b$ will also be whole numbers.

Example : ● $(+4) + (+5) = +9$, an integer

● $(-4) \times (+5) = -20$, an integer

- ❖ **Communicative property**—Addition and multiplication operations are both communicative for whole numbers.

Example : ● $(+4) + (+5) = +9 = (+5) + (+4)$, an integer

● $(-4) \times (+5) = -20 = (+5) \times (-4)$, an integer

- ❖ **Associative property**—Addition and multiplication operations are both associative for whole numbers.

Example : ● $7 + (5 - 3) = 7 + 2 = 9$

● $(7 + 5) - 3 = 12 - 3 = 9$

● $7 + (5 - 3) = (7 + 5) - 3$

- ❖ **Distributive property**— $a \times (b + c) = a \times b + a \times c$
or $(a + b) \times c = a \times c + b \times c$

- **Identity element**—‘0’ is called additive identity and ‘1’ is called multiplicative identity.

10. MODULES OF A NUMBER

$$|x| = \begin{cases} x & \text{when } x \geq 0 \\ -x & \text{when } x < 0 \end{cases}$$

For Ex. $|-5| = 5$
 $|4| = 4$ etc.

11. RATIONALISATION

When a radical contains an expression that is not a perfect root,

for example, the square root of 3 or cube root of 5, it is called an irrational number. So, in order to rationalize the denominator, we need to get rid of all radicals that are in the denominator. A rationalisation is a process by which radicals in the denominator of a fraction are eliminated.

Method of Rationalisation :

Step 1 : Multiply numerator and denominator by a radical that will get rid of the radical in the denominator.

Step 2 : Make sure all radicals are simplified.

Step 3 : Simplify the fraction if needed.

For example : Rationalize the denominator $\frac{1}{\sqrt{2}-1}$

$$\begin{aligned} \text{Solution :} &= \frac{1}{\sqrt{2}-1} \times \frac{\sqrt{2}+1}{\sqrt{2}+1} \\ &= \frac{\sqrt{2}+1}{(\sqrt{2})^2-1^2} \\ &= \frac{\sqrt{2}+1}{2-1} \\ &= \sqrt{2}+1 \end{aligned}$$

12. PROGRESSION

Progression is a sequence of numbers in order in which a pattern follows and there is an algebraic relation among them.

For example : $2 + 4 + 6 + 8 \dots\dots\dots$

Arithmetic Progression : Arithmetic progression is a sequence of numbers in order in which the difference of any two consecutive numbers is a constant value.

For example : $1, 4, 7, 10, 13 \dots\dots\dots$ is an A.P. which has a common difference between two successive terms $4 - 1 = 7 - 4 = 3$

the n^{th} term of AP $T_n = a + (n - 1)d$

Sum of the first n terms $S_n = \frac{n}{2}[2a + (n - 1)d]$

where a = first term
 d = common difference
 n = number of terms
 $T_n = n^{\text{th}}$ term

Example : Find the n^{th} term of A.P. : $1, 4, 7, 10 \dots\dots\dots T_n$, if the number of terms are 20.

Solution : Given AP : $1, 4, 7, 10 \dots\dots\dots T_n$
 $n = 20, d = 4 - 1 = 3$
 $T_n = a + (n - 1)d$
 $T_{20} = 1 + (20 - 1) \times 3$
 $T_{20} = 1 + 19 \times 3$
 $T_{20} = 58$

Some Special Formulae :

(i) $(a + b)^2 = (a^2 + b^2 + 2ab)$

(ii) $(a - b)^2 = (a^2 + b^2 - 2ab)$

(iii) $(a + b)^2 + (a - b)^2 + 2(a^2 + b^2)$

(iv) $(a + b)^2 - (a - b)^2 = 4ab$

(v) $(a^2 - b^2) = (a + b)(a - b)$

(vi) $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$

(vii) $(a - b)^3 = a^3 - b^3 - 3ab(a - b)$

(viii) $(a^3 + b^3) = (a + b)(a^2 - ab + b^2)$

(ix) $(a^3 - b^3) = (a - b)(a^2 + ab + b^2)$

(x) $\Sigma n = 1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$

(xi) $\Sigma n^2 = 1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{1}{6} n(n+1)(2n+1)$

JNV Previous Years (2007-2021) Questions

1. 25450 expressed in standard form is :

- (A) 2.545×10^{-4} (B) 2545×10^1
 (C) 25.45×10^2 (D) 2.545×10^4

[JNV Entrance Exam. (Class IX) 24-02-2021]

1. (D) Standard form of 25450 is :

$$= 2.545 \times 10^4$$

Hence, option (D) is correct.

2. The sum of four consecutive multiples of 7 is 322. Find the smallest multiple involved :

- (A) 91 (B) 84
 (C) 63 (D) 70

[JNV Entrance Exam. (Class IX) 24-02-2021]

2. (D) Four consecutive multiple of 7

$$7x, 7x + 7, 7x + 14, 7x + 21$$

According to question,

$$7x + 7x + 7 + 7x + 14 + 7x + 21$$

$$= 322$$

$$28x + 42 = 322$$

$$28x = 280$$

$$x = 10$$

The smallest multiple = $7x$

$$= 7 \times 10$$

$$= 70$$

3. Which of the following is not true?

- (A) $8/7 + 3/8 = 3/8 + 8/7$
 (B) $8/7 \times 3/8 = 3/8 \times 8/7$
 (C) $8/7 \div 3/8 = 8/7 \times 8/3$
 (D) $8/7 - 3/8 = 3/8 - 8/7$

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3. (D) $\frac{8}{7} - \frac{3}{8} = \frac{64 - 21}{56} = \frac{43}{56}$

and $\frac{3}{8} - \frac{8}{7} = -\left(\frac{8}{7} - \frac{3}{8}\right)$

$$= \frac{-43}{56}$$

Since, $\frac{43}{56} \neq \frac{-43}{56}$

So, option (D) is correct.

4. The product of a non zero rational number and its reciprocal is _____.

- (A) 1
 (B) 0
 (C) rational number itself
 (D) reciprocal of rational number

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4. (A) Let, non-zero rational number = $\frac{m}{n}$

So, its reciprocal will be = $\frac{n}{m}$

(According to question),

$$\frac{m}{n} \times \frac{n}{m} = 1$$

\Rightarrow option (A) is correct.

5. How many natural numbers exist between the squares of 28 and 29?

- (A) 30 (B) 58
 (C) 56 (D) 60

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5. (C) ATQ,

$$28^2 = 784 \text{ and } 29^2 = 841$$

So, first term = 784

last term = 841

Common difference = 1

\Rightarrow No. of natural numbers

$$= \frac{l - a}{d} + 1$$

$$= \frac{841 - 784}{1} + 1$$

$$= 57 + 1$$

$$= 58$$

So that natural numbers between the squares of 28 & 29 will be

$$58 - 2 = 56$$

6. The standard form of 12300000 is _____

- (A) 1.23×10^8 (B) 12.3×10^3
 (C) 1.23×10^7 (D) 1.23×10^9

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6. (C) ATQ, Standard form of 12300000
 $= 1.23 \times 10^7$

7. Which one of the following rational number is additive identity for rational numbers ?

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

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7. (A) Zero (0)

8. Multiplicative inverse of $\frac{0}{1}$ is—

- (A) 1 (B) -1
 (C) 0 (D) undefined

JNV Entrance Exam. (Class IX, 2019)

8. (D) Multiplicative inverse of 0
 $= \infty$ (undefined)

9. Which one of the following will have odd unit digit ?

- (A) 52^2 (B) 56^2
 (C) 57^2 (D) 58^2

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9. (C) On squaring 57 we will get an odd digit at its unit's place.

10. The unit digit in cube of 143 is :

- (A) 1 (B) 3
 (C) 7 (D) 9

JNV Entrance Exam. (Class IX, 2019)

10. (C) \therefore Unit digit in cube of 143

$$= \text{Unit digit of } (3)^3 \\ = \text{Unit digit of } 27 \\ = 7$$

11. In a number pattern 27, 64, 125, y, the value of y will be :

- (A) 37 (B) 216
 (C) 61 (D) 186

JNV Entrance Exam. (Class IX, 2019)

11. (B) The correct pattern of numbers is as follows :

$$\begin{array}{cccc} 27 & 64 & 125 & a \\ \downarrow & \downarrow & \downarrow & \downarrow \\ (3)^3 & (4)^3 & (5)^3 & (6)^3 \\ \hline +1 & +1 & +1 & \end{array} \Rightarrow$$

12. The nature of $(-5 + 2\sqrt{5} - \sqrt{5})$ is :

- (A) natural (B) integer
(C) rational (D) irrational

JNV Entrance Exam. (Class IX, 2018)

12. (D) Since $\sqrt{5}$ is an irrational number so, Irrational number.

13. A negative integer and a positive integer whose difference is +2, are :

- (A) -1, 3 (B) -2, 4
(C) -1, 1 (D) -4, 6

JNV Entrance Exam. (Class IX, 2018)

13. (C) From option (C)

$$1 - (-1) = 1 + 1 = 2$$

So, option (C) is correct.

14. How many pieces can be cut from 8.6 m long from 455.8 m long cloth ?

- (A) 43 (B) 48
(C) 55 (D) 53

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14. (D) No. of pieces to be cut

$$= \frac{455.8}{8.6} = 53$$

15. If the amount of ₹ 15487 is distributed equally in 76 students, then approximately, how much amount will each student get ?

- (A) ₹ 206 (B) ₹ 210
(C) ₹ 204 (D) ₹ 218

JNV Entrance Exam. (Class IX, 2017)

15. (C) Each student gets amount

$$= \frac{15487}{76} = 203.776$$

$$= 204$$

16. The value of $1 \div [1 + 1 \div \{1 + 1 \div (1 + 1 \div 2)\}]$ is :

- (A) 1 (B) $\frac{5}{8}$
(C) 2 (D) $\frac{1}{2}$

JNV Entrance Exam. (Class IX, 2017)

16. (B)

$$1 \div [1 + 1 \div \{1 + 1 \div (1 + 1 \div 2)\}]$$

$$= 1 \div \left[1 + 1 \div \left\{ 1 + 1 \div \frac{3}{2} \right\} \right]$$

$$= 1 \div \left[1 + 1 \div \left\{ 1 + \frac{2}{3} \right\} \right]$$

$$= 1 \div \left[1 + 1 \div \frac{5}{3} \right] = 1 \div \left[1 + \frac{3}{5} \right]$$

$$= 1 \div \frac{8}{5} = \frac{5}{8}$$

17. The price of 10 chairs is equal to the price of 4 tables. The total price of 15 chairs and 2 tables is ₹ 4000. The total price of 12 chairs and 3 tables is :

- (A) ₹ 3750 (B) ₹ 3840
(C) ₹ 3500 (D) ₹ 3900

JNV Entrance Exam. (Class IX, 2016)

17. (D) 10 Chairs = 4 Tables

$$\text{and } 15 \text{ Chairs} = \frac{4}{10} \times 15 \text{ Tables}$$

$$= 6 \text{ Tables}$$

$$\therefore \text{Cost of } (6 + 2) \text{ Tables}$$

$$= ₹ 4000$$

$$\therefore 12 \text{ Chairs} + 3 \text{ Tables}$$

$$= 12 \times \frac{4}{10} + 3$$

$$= 4.8 + 3$$

$$= 7.8 \text{ Tables}$$

$$\text{Price of 7.8 Tables} = \frac{4000}{8} \times 7.8$$

$$= ₹ 3900$$

18. $[2^2 + 3^2 + 4^2 + 5^2 + 6^2 + 7^2 + 8^2 + 9^2 + 10^2]$ is equal to :

- (A) 385 (B) 2916
(C) 540 (D) 384

JNV Entrance Exam. (Class IX, 2016)

$$18. (D) 2^2 + 3^2 + 4^2 + \dots + 10^2$$

$$= 1^2 + 2^2 + 3^2 + 4^2 + \dots + 10^2 - 1^2$$

$$= \frac{10(10+1)(2 \times 10 + 1)}{6} - 1$$

$$= \frac{10 \times 11 \times 21}{6} - 1$$

$$= 385 - 1 = 384$$

19. The sum of all three digit numbers, which when divided by 5, gives a remainder of 2, is :

- (A) 99810 (B) 98910
(C) 98901 (D) 89901

JNV Entrance Exam. (Class IX, 2015)

19. (B) The numbers 102, 107, ..., 997 are in A.P.

$$\therefore a = 102, d = 5$$

$$\text{and } l = 997$$

$$997 = 102 + (n - 1) \times 5$$

$$\Rightarrow 997 = 102 + 5n - 5$$

$$\therefore 5n = 997 - 97$$

$$\Rightarrow 5n = 900$$

$$\therefore n = 180$$

\therefore Required sum,

$$= \frac{180}{2} [102 + 997]$$

$$= 98910$$

20. Which of the following provides the correct value of $\sqrt{2}$?

- (A) $\frac{7}{5}$
(B) $\frac{13}{9}$
(C) $\frac{0.1}{0.07}$
(D) $\frac{7\sqrt{14}}{\sqrt{343}}$

JNV Entrance Exam. (Class IX, 2015)

20. (D) From Option (D),

$$\frac{7\sqrt{14}}{\sqrt{343}} = \frac{7 \times \sqrt{7} \times \sqrt{2}}{7 \times \sqrt{7}}$$

$$= \sqrt{2} = 1.414$$

$$\therefore \frac{7\sqrt{14}}{\sqrt{343}} \text{ \& } \sqrt{2} \text{ are equal.}$$

21. Kaushal gets 3 marks for every correct solution and loses 2 marks for every wrong solution. He solves 30 questions and gets 40 marks. How many correct questions did Kaushal solve ?

- (A) 25 (B) 20
(C) 15 (D) 10

JNV Entrance Exam. (Class IX, 2014)

21. (B) Total marks of 30 questions of Kaushal = $30 \times 3 = 90$ marks
Missing Marks = $90 - 40 = 50$
for 1 wrong answer = 3 + 2, i.e. 5 marks are deducted.

\therefore Number of wrong answers

$$= \frac{50}{5} = 10$$

\therefore Number of correct answers

$$= 30 - 10 = 20$$

22. If $\sqrt{2} = 1.414$, then what is the value of

$$\frac{1}{3 + 2\sqrt{2}} = ?$$

- (A) 5.828 (B) 0.172
(C) 1.172 (D) 0.43

JNV Entrance Exam. (Class IX, 2009)

22. (B) Since $\sqrt{2} = 1.414$

$$\begin{aligned} \text{then } \frac{1}{3+2\sqrt{2}} &= \frac{(3-2\sqrt{2})}{(3+2\sqrt{2})(3-2\sqrt{2})} \\ &= \frac{(3-2\sqrt{2})}{9-4 \times 2} \end{aligned}$$

$$\begin{aligned} &= 3 - 2\sqrt{2} \\ &= 3 - 2 \times 1.414 \\ &= 3 - 2.828 \\ &= 0.172 \end{aligned}$$

23. Which of the following is the value of $1^2 + 2^2 + 3^2 + \dots + n^2$?

- (A) $\frac{n(n+1)}{2}$
 (B) $\frac{n(n+1)(2n-1)}{6}$

(C) $\frac{n(n+1)(2n+1)}{6}$

(D) $\frac{n^2(n+1)^2}{36}$

JNV Entrance Exam. (Class IX, 2007)

23. (C) \therefore Sum of square of first 'n' natural numbers

$$\Sigma n^2 = \frac{n(n+1)(2n+1)}{6}$$

Important Questions

1. If the 7-digit number $134x58y$ is divisible by 72, then the value of $(2x + y)$ is :

- (A) 7 (B) 8
 (C) 9 (D) 6

2. If the 6 digit numbers $x35624$ and $1257y4$ are divisible by 11 and 72 respectively, then what is the value of $(5x - 2y)$?

- (A) 13 (B) 14
 (C) 10 (D) 12

3. Find the value of A, B, C and D in the following addition :

$$\begin{array}{r} 3 \text{ A B } 6 \\ + \text{ D } 1 7 \text{ C} \\ \hline 7 4 3 0 \end{array}$$

- (A) A = 2, B = 5, C = 4 and D = 4
 (B) A = 5, B = 4, C = 3 and D = 3
 (C) A = 4, B = 3, C = 5 and D = 4
 (D) A = 3, B = 4, C = 5 and D = 6

4. Find the value of A, B and C in the following subtraction :

$$\begin{array}{r} 4 3 \text{ A} \\ - \text{ B C } 9 \\ \hline 2 4 7 \end{array}$$

- (A) A = 6, B = 1, C = 7
 (B) A = 6, B = 1, C = 8
 (C) A = 5, B = 6, C = 3
 (D) A = 4, B = 3, C = 4

5. Find the values of A and B in the following multiplication :

$$\begin{array}{r} 3 \text{ A} \\ \times 7 \\ \hline 2 \text{ B } 8 \end{array}$$

- (A) A = 3, B = 4 (B) A = 5, B = 6
 (C) A = 4, B = 3 (D) A = 6, B = 3

6. Find the values of A, B and C in the following multiplication :

$$\begin{array}{r} \text{ A B} \\ \times \text{ B A} \\ \hline \text{ C } 0 \text{ B} \end{array}$$

- (A) A = 1, B = 3 and C = 4
 (B) A = 4, B = 1 and C = 3
 (C) A = 5, B = 2 and C = 3
 (D) A = 2 B = 4 and C = 3

7. Find the values of A, B, C and D in the following division :

$$\begin{array}{r} \text{A} \overline{) 38 \text{ C } (4 \text{ D} \\ \underline{-28} \\ 0 \text{ C} \\ \underline{-0 \text{ C}} \\ \times \end{array}$$

- (A) A = 4, B = 3, C = 3 and D = 6
 (B) A = 3, B = 4, C = 8 and D = 4
 (C) A = 7, B = 4, C = 3 and D = 9
 (D) A = 4, B = 7, C = 4 and D = 8

8. Find the values of A, B, C, D, E, F and G in the following

$$\begin{array}{r} \text{A B } \overline{) 3 \text{ C D E } (\text{ F O} \\ \underline{-2 7} \\ 6 \text{ D} \\ \underline{-5 4} \\ 8 \text{ E} \\ \underline{-8 \text{ E}} \\ \times \end{array}$$

- (A) A = 2, B = 7, C = 3, D = 2, E = 1, F = 2, G = 3
 (B) A = 7, B = 2, C = 2, D = 1, E = 2, F = 3, G = 4
 (C) A = 3, B = 4, C = 6, D = 3, E = 4, F = 3, G = 6
 (D) A = 4, B = 2, C = 1, D = 3, E = 4, F = 4, G = 7

9. The sum of the squares of 3 consecutive positive numbers is 365. Accordingly, what is the sum of those numbers ?

- (A) 30 (B) 33
 (C) 36 (D) 45

10. In a division question, the denominator is 10 times its quotient and 5 times the remainder. Accordingly, if the remainder is 46, what will be the dividend ?

- (A) 4236 (B) 4306
 (C) 4336 (D) 5336

11. 30% of one number is equal to 40% of the other number. 25% of the sum of both those numbers is equal to 420. Find the smaller number.

- (A) 780 (B) 760
 (C) 720 (D) 700

12. Four prime numbers are in the ascending order. Product of the first three numbers is 455 and product of the last three numbers is 1729. Find the largest prime number of them.

- (A) 7 (B) 13
 (C) 19 (D) 23

13. Sum and product of two numbers are 5 and 6 respectively. Find the sum of reciprocals of their squares.

- (A) $\frac{13}{36}$ (B) $\frac{36}{13}$
 (C) $\frac{6}{5}$ (D) $\frac{5}{6}$

14. The maximum score of runs in an innings was 3/11 of the total score. The second score in the same innings was the maximum score of 3/11 of the remaining runs. If the difference of both scores is 9, then what was the total score ?

- (A) 106 (B) 146
 (C) 118 (D) 121

15. Find such three numbers that the twice the first number, thrice the second and 4 times of the third number make a sum of 191.

- (A) 19, 20, 21
 (B) 21, 22, 23
 (C) 20, 21, 22
 (D) 22, 23, 24

16. There are 108 tables and 132 chairs in an office. If 1/6 tables and 1/4 chairs got broken, then how many people can work in the office as per the need of one table and chair for each ?

- (A) 86 (B) 90
 (C) 92 (D) 99

17. Divide 37 in such two parts that the sum of 5 times of the first part and 11 times of the second part is 227.

- (A) 15, 22 (B) 20, 17
 (C) 25, 12 (D) 30, 7

18. If 510 is divided between A, B, C in such a way that A gets $\frac{2}{3}$ of what B gets and B gets $\frac{1}{4}$ of what C gets, then their share in rupees (shares) respectively ?
 (A) 120, 240, 150 (B) 60, 90, 360
 (C) 150, 300, 60 (D) 110, 250, 150
19. If in 24 coins, there are 1 coins, 50 paise coins and 25 paise coins. The value of these coins is 13.75. If the number of 1 coins and the number of 25 paise coins is equal, then how many 25 paise coins are there ?
 (A) 16 (B) 5
 (C) 7 (D) 22
20. There are 12000 soldiers in an army, some of whom are Indians and the rest are European. The average height of a European soldier is 1.80 m, that of an Indian soldier is 1.75 m, and the length of the entire army is $1\frac{47}{60}$ m. So, how much are the Indian soldiers ?
 (A) 6000 (B) 8000
 (C) 1000 (D) 4000
21. A teacher wants to keep his students in an equal number in rows and columns. If the total number of students is 1369, then find the number of students in the last row ?
 (A) 37 (B) 33
 (C) 63 (D) 47
22. After his death, Ram left $\frac{1}{3}$ of his asset in the name of his widowed wife and left the remaining $\frac{3}{5}$ in the name of his daughter and gave the remaining property to the son. If the son got 6400, then what was the original asset of Rama ?
 (A) ₹ 16000 (B) ₹ 32000
 (C) ₹ 24000 (D) ₹ 1600
23. The sum of perfect squares of numbers between 120 and 300 is :
 (A) 1204 (B) 1024
 (C) 1296 (D) 1400
24. Average age of P, Q and R is 5 more than the age of R. If sum of ages of P and Q is 39 years, then find the age of R.
 (A) 16 yr. (B) 14 yr.
 (C) 12 yr. (D) 24 yr.
25. Ratio between a father's age and his son's age is 5 : 2. If product of their ages 1000, then find the father's age after 10 years :
 (A) 50 (B) 60
 (C) 80 (D) 100
26. The product of all prime numbers between 80 and 90 is :
 (A) 83 (B) 89
 (C) 7387 (D) 7200
27. If the sum of 5 consecutive integers is S, then how will the largest integer S be related to S ?
 (A) $\frac{S-10}{5}$ (B) $\frac{S+4}{4}$
 (C) $\frac{S+5}{4}$ (D) $\frac{S+10}{5}$
28. x is the average of the numbers y and y is the average of the numbers x . What will be the total average of all the numbers ?
 (A) $\frac{x+y}{2xy}$ (B) $\frac{2xy}{x+y}$
 (C) $\frac{x^2+y^2}{x+y}$ (D) $\frac{xy}{x+y}$
29. Which statement among the following is not true ?
 (A) Every natural number is an integer.
 (B) Every natural number is a real number.
 (C) Every real number is a rational number.
 (D) Every integer in a rational number.
30. Sum of a positive number and its square is equal to the product of first three prime numbers. Find the positive number.
 (A) 2 (B) 3
 (C) 5 (D) 6
31. I multiplied a positive integer by 18 and another number by 21, then add both the results. Find the sum.
 (A) 2007 (B) 2008
 (C) 2006 (D) 2002
32. Product of two numbers is 45 and their difference is 4. What will be the sum of squares of the numbers ?
 (A) 135 (B) 240
 (C) 73 (D) 106
33. Find the unit digit in the product $(122)^{173}$
 (A) 2 (B) 4
 (C) 6 (D) 8
34. I am three times older of my son. after 15 years, I will be twice the age of the son. Find the sum of our ages.
 (A) 48 years (B) 60 years
 (C) 64 years (D) 72 years
35. If $\sqrt{1+\frac{x}{9}} = \frac{13}{3}$, then find x :
 (A) $\frac{1439}{9}$ (B) 160
 (C) $\frac{1443}{9}$ (D) 169
36. Sum of two numbers is 24 and their product is 143. Find the sum of their squares.
 (A) 296 (B) 295
 (C) 290 (D) 228
37. A man bought some eggs for 5 at 3 per each and sold them for 12 at 5 per each. If he received 143 in total, then find the number of eggs he bought.
 (A) 210 (B) 200
 (C) 195 (D) 190
38. Find the least number which is added to the largest 4-digit number and the obtained result is divisible by 345.
 (A) 50 (B) 6
 (C) 60 (D) 5
39. Find the unit digit in the sum of $(124)^{372} + (124)^{373}$.
 (A) 5 (B) 4
 (C) 2 (D) 0

Solutions

1. (B) $134x587y$ given number is divisible by 72 when it is divisible by 2 and 3.
 So, y must be 0, 2, 4, 6 and 8
 And $(1 + 3 + 4 + x + 5 + 8 + y)$ must be divisible by 3.
 $(21 + x + y)$ must be divisible by 3
 For $y = 0, x = 0, 3$, then $2x + y = 0, 6$
 For $y = 2, x = 1$, then $2x + y = 4$
 For $y = 4, x = 2$, then $2x + y = 8$.
 The, among the given option only '8' is correct.
2. (B) Given number, $x35624$
 Sum of digits at even places
 $= 3 + 6 + 4$
 $= 13$
 Sum of digits at odd places
 $= x + 5 + 2$
 $= 7 + x$
 to be divisible by 11, difference between above both sums must be

zero or divisible by 11.

$$\text{So, } 13 - (7 + x) = 6 - x$$

$$\therefore x = 6$$

and given number = 1257y4

$$1 + 2 + 5 + 7 + y + 4 = 19 + y$$

to be divisible by 72 number must be divisible by 2, 3 and 4

There is 4 in the last of number so it is divisible by 2.

to be divisible by 3 and 4

$$y = 8$$

$$\text{So } 5x - 2y = 5 \times 6 - 2 \times 8$$

$$= 30 - 16$$

$$= 14$$

$$3. (A) \quad 6 + C = 10$$

$\Rightarrow C = 4$, and 1 is carried over.

Also, $(1 + B) + 7$ is a number whose units digit is 3.

$$\therefore (1 + B) + 7 = 13$$

$$\Rightarrow B + 8 = 13$$

$$\Rightarrow B = 5$$

and 1 is carried over.

$$\text{Now, } (1 + A) + 1 = 4$$

$$\Rightarrow A + 2 = 4$$

$$\Rightarrow A = 2$$

$$\text{Further, } 3 + D = 7$$

$$\Rightarrow D = 7 - 3 = 4$$

Hence, $A = 2$, $B = 5$, $C = 4$ and $D = 4$

$$4. (B) \quad 16 - 9 = 7$$

$\Rightarrow A = 6$, and 1 is borrowed from 3.

$$\text{Now, } 12 - 8 = 4,$$

So, $C = 8$ and 1 is borrowed from 4.

$$\text{Finally, } 3 - 2 = 1$$

$$\text{So, } B = 1$$

Hence, $A = 6$, $B = 1$ and $C = 8$.

$$5. (C) \text{ Clearly, } 4 \times 7 = 28$$

So, $A = 4$ and 2 is carried over.

$$\text{Now, } 3 \times 7 + 2 = 23$$

$$\text{So, } B = 3$$

Hence, $A = 4$ and $B = 3$

$$6. (A) \text{ Here, } AB = B, \text{ So, } A = 1$$

Now, we have the following

$$\begin{array}{r} 1 \quad B \\ \times B \quad 1 \\ \hline 1 \quad B \\ B \quad B^2 \quad \times \\ \hline B \quad 1 + B^2 \quad B \end{array}$$

The middle digit of the number B

$(1 + B^2)B$ is 0. But $1 + B^2$ cannot be equal to zero.

$$\therefore 1 + B^2 = 10$$

$$\Rightarrow B^2 = 9$$

$$\Rightarrow B = 3$$

Hence, $A = 1$, $B = 3$ and $C = 4$

Thus, $\begin{array}{r} 1 \quad 3 \\ \times 3 \quad 1 \\ \hline 4 \quad 0 \quad 3 \end{array}$

$$7. (C) \text{ Here, } A \times 4 = 28$$

$$7) 343 (49$$

$$\underline{-28}$$

$$63$$

$$\underline{-63}$$

$$\times$$

$$\Rightarrow A = 28 + 4 = ?$$

$$\text{Also, } 3B - 28 = 6$$

$$\Rightarrow 3B = 28 + 6 = 34$$

$$\Rightarrow B = 4$$

$$7 \times 8 = 63, \text{ So, } C = 3 \text{ and } D = 9$$

Hence, $A = 7$, $B = 4$, $C = 3$ and $D = 9$.

$$8. (A) \text{ Clearly, } AB \times 1 = 27$$

$$27) 3321 (123$$

$$\underline{-27}$$

$$62$$

$$\underline{-54}$$

$$81$$

$$\underline{-81}$$

$$\times$$

$$\Rightarrow A = 2 \text{ and } B = 7$$

$$\text{Then, } 27 + 6 = 33$$

$$\Rightarrow C = 3$$

$$\text{Next, } 54 + 8 = 62$$

$$\Rightarrow D = 2 \text{ and } F = 2$$

$$\text{Finally, } 27 \times 3 = 81$$

$$\Rightarrow E = 1 \text{ and } G = 3$$

Hence, $A = 2$, $B = 7$, $C = 3$, $D = 2$,

$E = 1$, $F = 2$ and $G = 3$

9. (B) Let, three consecutive positive numbers are $(x - 1)$, x and $(x + 1)$ respectively.

According to question,

$$(x - 1)^2 + (x)^2 + (x + 1)^2 = 365$$

$$\Rightarrow x^2 + 1 - 2x + x^2 + x^2 + 1 + 2x = 365$$

$$\Rightarrow 3x^2 + 2 = 365$$

$$\Rightarrow 3x^2 = 365 - 2 = 363$$

$$\Rightarrow x^2 = \frac{363}{3} = 121 = (11)^2$$

$$\therefore x = 11$$

$$\therefore x - 1 = 11 - 1$$

$$= 10$$

$$\text{and } x + 1 = 11 + 1 = 12$$

$$\therefore \text{ Required sum} = 10 + 11 + 12 = 33$$

10. (D) According to the question,

$$\text{Divisor} = \text{Quotient} \times 10$$

$$\text{Divisor} = \text{Remainder} \times 5$$

$$\text{Divisor} = 46 \times 5 = 230$$

$$\text{Quotient} = \frac{\text{Divisor}}{10} = \frac{230}{10} = 23$$

$$\text{Dividend} = \text{Divisor} \times \text{Quotient}$$

$$+ \text{Remainder}$$

$$= 230 \times 23 + 46$$

$$= 5290 + 46 = 5336$$

11. (C) Let the numbers be x and y .

According to the question,

$$\frac{x \times 30}{100} = \frac{y \times 40}{100}$$

$$\Rightarrow 3x = 4y$$

$$\therefore x = \frac{4y}{3}$$

$$\frac{(x + y) \times 25}{100} = 420$$

$$\therefore x + y = 1680$$

$$\Rightarrow \frac{4y}{3} + y = 1680$$

$$\Rightarrow \frac{4y + 3y}{3} = 1680$$

$$\Rightarrow \frac{7y}{3} = 1680$$

$$\therefore y = \frac{1680 \times 3}{7} = 720$$

So, the smaller number = 720

12. (C) Let, 4 prime numbers a, b, c, d are in ascending order.

According to question,

$$a \times b \times c = 455$$

$$\text{and } b \times c \times d = 1729$$

$$\therefore \frac{a \times b \times c}{b \times c \times d} = \frac{455}{1729}$$

$$\Rightarrow \frac{a}{d} = \frac{5}{19}$$

So, the smallest number = 5, and the largest number = 19

13. (A) Let, the numbers be x and y .

According to question,

$$x + y = 5 \quad \dots(i)$$

and $x \times y = 6$

$$\begin{aligned} (x - y)^2 &= (x + y)^2 - 4xy \\ &= (5)^2 - 4 \times 6 \\ &= 25 - 24 \\ &= 1 \end{aligned}$$

$$x - y = 1 \quad \dots(ii)$$

From eq. (i) and (ii),

$$\begin{aligned} x + y &= 5 \\ x - y &= 1 \end{aligned}$$

$$2x = 6$$

$$\therefore x = \frac{6}{2} = 3$$

From eq. (i), $x + y = 5$

$$\Rightarrow 3 + y = 5$$

$$\therefore y = 5 - 3 = 2$$

According to the question,

$$\left(\frac{1}{x}\right)^2 + \left(\frac{1}{y}\right)^2 \Rightarrow \left(\frac{1}{3}\right)^2 + \left(\frac{1}{2}\right)^2$$

$$= \frac{1}{9} + \frac{1}{4} = \frac{4+9}{36} = \frac{13}{36}$$

14. (D) Let, the total score = x

$$\text{Maximum score} = \frac{3x}{11}$$

and maximum number of 2nd number

$$= \frac{3}{11} \times \text{Remaining runs}$$

$$= \frac{3}{11} \times \left(x - \frac{3x}{11}\right) = \frac{3}{11} \times \frac{8x}{11} = \frac{24x}{121}$$

According to the question,

$$\frac{3x}{11} - \frac{24x}{121} = 9$$

$$\Rightarrow \frac{33x - 24x}{121} = 9$$

$$\Rightarrow \frac{9x}{121} = 9$$

$$\therefore x = \frac{9 \times 121}{9} = 121$$

15. (C) The numbers are $x, x + 1$ and $x + 2$.

$$\therefore 2x + 3x + 3 + 4x + 8 = 191$$

$$\Rightarrow 9x = 191 - 11 = 180$$

$$\Rightarrow x = 20$$

$$\therefore \text{Answer} = 20, 21 \text{ and } 22$$

16. (B) Safe tables = $\frac{5}{6} \times 108 = 90$

$$\text{Safe chairs} = \frac{3}{4} \times 132 = 99$$

$$\therefore \text{Safe pairs} = 90$$

17. (D) If 1st part be x .

Then, the 2nd number = $37 - x$

$$\therefore x \times 5 + (37 - x) \times 11 = 227$$

$$\Rightarrow 5x + 407 - 11x = 227$$

$$\Rightarrow 6x = 407 - 227 = 180$$

$$\Rightarrow x = 30$$

$$\therefore \text{the 2nd number} = 7$$

18. (B) A | B | C

$$\frac{2x}{3} \quad | \quad x \quad | \quad 4x$$

$$\Rightarrow \frac{2x}{3} + x + 4x = 510$$

$$\Rightarrow 17x = 510 \times 3$$

$$\Rightarrow x = 90$$

$$\therefore A = \frac{2 \times 90}{3} = ₹ 60$$

$$B = ₹ 90,$$

$$C = ₹ 360$$

19. (C) Let, the number of coins of 25p = x .

$$\therefore \text{The number of coins of 50p} = 24 - 2x$$

$$\therefore x + \frac{24 - 2x}{2} + \frac{x}{4} = 13.75$$

$$\Rightarrow x + 12 - x + \frac{x}{4} = 13.75$$

$$\Rightarrow \frac{x}{4} = 13.75 - 12 = 1.75$$

$$\therefore x = 1.75 \times 4 = 7$$

20. (D) Let, the number of Indian soldiers be x .

$$\therefore \text{European soldiers} = 12000 - x$$

$$\therefore (12000 - x) \times 1.8 + x \times 1.75$$

$$= 12000 \times \left(1 \frac{47}{60}\right)$$

$$\Rightarrow 21600 - 1.8x + 1.75x = 21400$$

$$\Rightarrow -0.05x = -200$$

$$\therefore x = \frac{200}{0.05} = 4000$$

21. (A) Required numbers of students in the

$$\text{last row} = \sqrt{1369} = 37$$

22. (C) Let, Ram's asset = x .

According to question,

$$\frac{x}{3} + \left(x - \frac{x}{3}\right) \frac{3}{5} + 6400 = x$$

$$\Rightarrow \frac{x}{3} + \frac{2x}{3} \times \frac{3}{5} + 6400 = x$$

$$\Rightarrow x - \left(\frac{x}{3} + \frac{2x}{5}\right) = 6400$$

$$\Rightarrow x - \left(\frac{5x + 6x}{15}\right) = 6400$$

$$\Rightarrow \frac{15x - 11x}{15} = 6400$$

$$\Rightarrow 4x = 6400 \times 15$$

$$\therefore x = 1600 \times 15$$

$$x = ₹ 24000$$

23. (D) Perfect square between 120 and 300 are : $(11)^2, (12)^2, (13)^2, (14)^2, (15)^2, (16)^2, (17)^2$

$$\text{Required sum} = 121 + 144 + 169 + 196 + 225 + 256 + 289 = 1400$$

24. (C) According to question,

$$\frac{P+Q+R}{3} = (R + 5)$$

$$\Rightarrow P + Q + R = 3R + 15$$

$$\Rightarrow P + Q = 2R + 15$$

$$\Rightarrow 2R + 15 = 39 \quad [\because P + Q = 39]$$

$$\Rightarrow 2R = 39 - 15$$

$$\Rightarrow 2R = 24$$

$$\therefore R = 12 \text{ yr.}$$

25. (B) Let, the present age of father and his son are $5x$ yr. and $2x$ yr.

According to question,

$$5x \times 2x = 1000$$

$$\Rightarrow 10x^2 = 1000$$

$$\Rightarrow x^2 = 100$$

$$\therefore x = 10$$

$$\text{Father's age after 10 years} = 5x + 10$$

$$= 5 \times 10 + 10$$

$$= 50 + 10 = 60 \text{ yr.}$$

26. (C) Prime numbers between 80 and 90 = 83 and 89

$$\therefore \text{Required product} = 83 \times 89 = 7387$$

27. (D) Let, five consecutive numbers be $a, (a + 1), (a + 2), (a + 3)$ and $(a + 4)$ respectively.

$$\therefore S = (a) + (a + 1) + (a + 2) +$$

$$(a + 3) + (a + 4)$$

$$= 5a + 10$$

$$\Rightarrow 5a = S - 10 \quad \therefore a = \frac{S-10}{5}$$

$$\begin{aligned} \therefore \text{Largest integer} &= a + 4 \\ &= \frac{S-10}{5} + 4 \\ &= \frac{S-10+20}{5} \\ &= \frac{S+10}{5} \end{aligned}$$

28. (B) According to question,

$$\text{Sum of } x \text{ numbers} = x \times y = xy$$

$$\text{Sum of } y \text{ numbers} = y \times x = xy$$

$$\begin{aligned} \therefore \text{Average of } (x+y) &= \frac{xy+xy}{x+y} \\ &= \frac{2xy}{x+y} \end{aligned}$$

29. (C) Every real number is a rational number.

30. (C) Let, the required number = x

According to question,

$$x + (x)^2 = 2 \times 3 \times 5$$

(three prime numbers)

$$\Rightarrow x + x^2 = 30$$

$$\Rightarrow x^2 + x - 30 = 0$$

$$\Rightarrow x^2 + 6x - 5x - 30 = 0$$

$$\Rightarrow x(x+6) - 5(x+6) = 0$$

$$\Rightarrow (x+6)(x-5) = 0$$

$$\Rightarrow (x-5) = 0$$

$$\therefore x = 5$$

31. (A) Let, two positive integers are x and y . Then, according to question

$$18x + 21y = 3(6x + 7y)$$

So, only 2007 is divisible by 3.

Hence, it is only the possible.

32. (D) Let the numbers be x and y .

According to question,

$$x \times y = 45$$

and $x - y = 4$

$$\begin{aligned} \therefore x^2 + y^2 &= (x-y)^2 + 2xy \\ x^2 + y^2 &= (4)^2 + 2 \times 45 \\ &= 16 + 90 = 106 \end{aligned}$$

33. (A) Unit digit in $(122)^{173}$

$$= \text{Unit digit in } (2)^{173}$$

$$= \text{Unit digit in } (2)^{172+1}$$

$$= \text{Unit digit in } (2)^1 = 2$$

34. (B) Let, Son's age = x yr.

My present age = $3x$ yrs

According to question,

$$\frac{3x+15}{x+15} = \frac{2}{1}$$

$$\Rightarrow 3x + 15 = 2x + 30$$

$$\Rightarrow 3x - 2x = 30 - 15$$

$$\therefore x = 15$$

Sum of the ages

$$= x + 3x$$

$$= 4x = 4 \times 15 = 60 \text{ yr.}$$

35. (B) According to question,

$$\sqrt{1+\frac{x}{9}} = \frac{13}{3}$$

$$\Rightarrow \left(\sqrt{1+\frac{x}{9}}\right)^2 = \left(\frac{13}{3}\right)^2$$

$$\Rightarrow 1+\frac{x}{9} = \frac{169}{9}$$

$$\Rightarrow \frac{9+x}{9} = \frac{169}{9}$$

$$\Rightarrow 9+x = 169$$

$$\therefore x = 169 - 9 = 160$$

36. (C) Let, the numbers be x and y .

According to question

$$x + y = 24$$

and $x \times y = 143$

$$\begin{aligned} \therefore x^2 + y^2 &= (x+y)^2 - 2xy \\ &= (24)^2 - 2 \times 143 \\ &= 576 - 286 = 290 \end{aligned}$$

37. (C) Let, the total no. of eggs = x

$$\text{C.P of total eggs} = x \times \frac{5}{3}$$

$$= ₹ \frac{5x}{3}$$

$$\text{S.P of total eggs} = x \times \frac{12}{5}$$

$$= ₹ \frac{12x}{5}$$

$$\therefore \frac{12x}{5} - \frac{5x}{3} = 143$$

$$\Rightarrow \frac{36x - 25x}{15} = 143$$

$$\Rightarrow \frac{11x}{15} = 143$$

$$\therefore x = \frac{143 \times 15}{11} = 195$$

Hence, total purchased eggs = 195

38. (B) \therefore 10005 is exactly divisible by 345.

Hence, the smallest number

$$= 10005 - 9999 = 6$$

39. (D) $(124)^{372} + (124)^{373}$

$$= (124)^{372} [1 + 124]$$

$$= (124)^{372} \times 125 = [(124^4)^{93} \times 125]$$

\therefore Required Unit digit

$$= \text{Unit digit in } (4)^4 \times 125$$

$$= 6 \times 5 = 30$$

\therefore Required Unit digit = 0



Chapter 1 Crop Production and Management

Before we discuss crop production and management, we will do a quick recap of soil.

1. Soil

- The mixture of rock particles and humus is called the soil.
- The rotting dead matter (decomposed matter of plant and animal waste) in the soil is called humus. The soil is formed by the breaking down of rocks by the action of wind, water and climate. This process is called weathering. The nature of any soil depends upon the rocks from which it has been formed and the type of vegetation that grows in it. A vertical section through different layers of the soil is called the soil profile.
- Each layer differs in feel (texture), colour, depth and chemical composition. These layers are referred to as horizons.
- **A-horizon (upper layer)** : The uppermost horizon is generally dark in colour as it is rich in humus and minerals. The humus makes the soil fertile and provides nutrients to growing plants. This layer is generally soft, porous and can retain more water. It is called the topsoil or the A-horizon. This provides shelter for many living organisms such as worms, rodents, moles and beetles. The roots of small plants are embedded entirely in the topsoil.
- **B-horizon (middle layer)** : It has a lesser amount of humus but more of minerals. This layer is generally harder and more compact.
- **C-horizon** : It is made up of small lumps of rocks with cracks and crevices. Below this layer is the bedrock.
- **Classification of soil** : The soil is classified on the basis of the proportion of particles of various sizes. If soil contains a greater proportion of big particles, it is called sandy soil. If the proportion of fine particles is relatively higher, then it is called clayey soil. If the amount of large and fine particles is about the same, then the soil is called loamy. The best topsoil for growing plants is loam.
- Percolation rate (mL/min) = amount of water (mL) / percolation time (min).
- **Soil and crops** : Clayey and loamy soils are both suitable for growing cereals like wheat and gram. Such soils are good at retaining water. For paddy, soils rich in clay and organic matter and having a good capacity to retain water are ideal. For lentils (masoor) and other pulses, loamy soils, which drain water easily, are required. For cotton, sandy loam or loam, which drain water easily.

2. Agricultural Practices

- Green plants make their own food using a process called photosynthesis but animals and humans cannot. Therefore,

they are directly or indirectly dependent on plants. To provide food for a larger population, new technologies are required to help the farmers to increase productivity both in terms of quality or quantity.

- **Crops** : When plants of the same kind are grown and cultivated at one place on a large scale, it is called a crop. Due to different climatic conditions like temperature, humidity and rainfall; there is a rich variety of crops grown in different parts of the country. In our country the following three categories of crops are grown :
- **Kharif Crops** : The crops which are sown in the rainy season (*i.e.*, they are planted from June and harvested in September or October) are called kharif crops. Paddy, maize, soya bean, groundnut and cotton are kharif crops.
- **Rabi Crops** : The crops grown in the winter season (*i.e.*, they are planted from October/November and harvested in March/April) are called rabi crops. Examples of rabi crops are wheat, gram, pea, mustard, and linseed.
- **Zaid Crops (Summer crops)** : The crops which are grown in the summer season are called zaid crops. Muskmelon, watermelon and cucumber are examples for zaid crops
- **Classification of Crops** : According to utility, crops are classified as ahead :
- **Food Crops** : These are used in preparing food. Paddy and maize are cultivated for human consumption.
- **Fodder Crops** : These are useful for livestock consumption. For *e.g.*, Sorghum, millets.
- **Fibre Crops** : These crops are used for cordage and textile. For *e.g.*, Cotton and hemp.
- **Oil Crops** : These are useful on a large scale for consumption or industrial uses. For *e.g.*, *Groundnut and sesame.*
- **Ornamental Crops** : These are utilized for landscape gardening. For *e.g.*, Croton and Bougainvillea.

3. Basic Practices of Crop Production

Different activities in crop production are ploughing, sowing, applying fertilizers, harvesting and seed storage. All these activities collectively have an effect on the yield of crops.

- Soil Preparation** : Ploughing or tilling is the process of loosening and turning the soil up and down to facilitate the availability of nutrients in the root zone of the cultivating crop. Plough is mainly used for tilling the soil, to add fertilisers to the crop, remove weeds and other waste materials from the field and also to turn the soil. A plough is made of wood and a sharp triangular iron strip known as

ploughshare. The plough is drawn by a pair of bulls or horses. Cultivators also kill weeds and dig up unwanted vegetation available in the field.

Once the field is ploughed, the levelling of soil is done with a heavy wooden or iron plank. Levelling of the field also helps in uniform distribution of water during irrigation. Manuring means adding manure to the soil. Manure contains many nutrients required for the growth of crop plants.

(ii) **Sowing of Seeds** : This is the second step in crop production. Once the soil preparation is over, planting of seeds in the soil is done. This is called sowing. Various methods are followed for sowing the seeds :

- **Sowing by Hand** : Simplest and economical method in which seeds are scattered by hand.
- **Seed Drill** : It is a modern method of sowing seeds. It is a better and more efficient method because it ensures that the seeds are planted at equal intervals and at the correct depth in the soil. It is usually done by attaching iron drills to a tractor.
- **Dibbling** : It is the placement of seed material in a furrow, pit or hole at predetermined spacing with a dibble, more commonly by hand.

(iii) **Adding Manure and Fertilizers** : The substances which are added to the soil in the form of nutrients to enhance the growth of plants are called manure and fertilisers. Manure is an organic substance obtained from the decomposition of plants or animal wastes. Organic manures are decomposed matter of plant and animal waste and help to maintain the soil fertility, protecting them from wind and water erosion and preventing nutrient losses through runoff and leaching. This also increases water-holding capacity, soil aggregation, soil aeration and permeability.

Fertilizer is a substance which is added to the soil to improve plants' growth and yield. Fertilizers are composed mainly of Urea, Ammonium sulphate, Super phosphate, Potash and NPK (Nitrogen, Phosphorus, Potassium). For better quality of food, synthetic fertilizers are also used.

(iv) **Irrigation** : The supply of water to crops at regular intervals is called irrigation. Effective irrigation is the controlled and uniform supply of water to crops, in the required amount at the right time with the minimum expenditure. Irrigation can be carried out by two different methods :

- **Traditional methods** : In these methods, irrigation is done manually. Water from wells or canals is carried to farming fields with the use of electric pumps, cattles or by hand. This method is cheaper but there is an uneven distribution of water and also heavy loss of water.
- **Modern methods** : This method helps to overcome the problems even distribution of moisture in the field. It uses 2 systems *i.e.*, sprinkler system and drip system. Sprinkler system is advisable in areas facing water scarcity. Here a pump which generates pressure is connected to pipes, and water is sprinkled through the fine nozzles of pipes. In a drip system, water is released

drop by drop exactly at the root zone using a hose or pipe. This method is considered as the effective one in regions where the availability of water is less.

(v) **Weeding** : These undesirable plants that grow with main crops are called weeds. The removal of weeds is called weeding. Weeding is an important process because weeds compete with the crop plants for the nutrients, sunlight, water, space and other resources. It results in the under-nourishment of crops and leads to low yield. Farmers adopt many ways to remove weeds and control their growth. Some of them are explained below :

- **Mechanical Methods** : Most common methods in which weeds are destroyed physically by hand pulling or weeding with the help of weeding hoe.
- **Tillage Methods** : It is one of the practical methods of destroying weeds of all categories. Weeds are buried in the soil and also exposed to sun heat by deep ploughing.
- **Crop Rotation** : In this method, proper rotation of crops is followed for controlling crop associated and parasitic weeds.
- **Summer Tillage** : Deep ploughing after harvest of rabi crop and exposing underground parts of weeds to strong sunlight during summer months is useful for destroying many annual and perennial weeds.
- **Biological Weed Control** : In this method, bio agents like insects and pathogens are used to control weeds. This helps in reduction and regulation of the weed population.
- **Chemical Methods** : The chemicals used for killing the weeds or inhibiting their growth are called herbicides or weedicides. These chemicals are mixed with water and sprayed over the crops.

(vi) **Harvesting** : The process of cutting and gathering a crop is called harvesting. Manual harvesting is the major method of harvesting in India and is done by uprooting the crops like ground nut, green gram, black gram and horse gram with hand. In mechanical methods, people are employed to harvest the crops using sickle and is popular in small sized farms. Machine harvesting is done in large sized farms.

After harvesting, threshing and winnowing is done. The process of separating the grains from their chaffs or pods is threshing. After threshing, we must separate the grains from the chaffs. Winnowing is the process of separating the grains.

(vii) **Storage of Foodgrains** : Because the crop is seasonally produced but consumed throughout the year therefore, storage is needed. Before storing, harvested grains should be made free from moisture to avoid growth of microorganisms. Therefore, they are dried in the sun before storing. Foodgrains are collected in gunny bags and then stored in godowns. Silos and grains are used for the storage of grains on a large scale. Chemical vapours are sprayed to minimize pests and insects in godowns. This is called fumigation.



Do you know?

The main steps for agricultural practices include : Ploughing (preparation of soil)-sowing-adding manure and fertilizers-irrigation-weeding-harvesting.

- Low temperature is not an essential condition to grow maize. It is a kharif (summer) crop, so it needs a high temperature (above 30°C) for its growth and seed setting.
- The occasion of tree plantation in July/August is called Van Mahotsav. It was started by Kulpati Kanaiyal Lal Munshi, Union Minister for agriculture for creating interest in masses for tree plantation and afforestation.
- Contour farming is considered best in the mountainous parts, because it is cultivated due to the slope on the mountains. Contour farming is the practice of ploughing or cultivating on a slope, following its height contour lines.
- Earthworm is considered a friend of farmers, as it helps in maintaining soil fertility.
- Animals reared at home or in farms, have to be provided with proper food, shelter and care. When this is done on a large scale, it is called animal husbandry.

- **Fallow** is a **farming** technique in which arable land is left without sowing for one or more vegetative cycles. The goal of **fallowing** is to allow the land to recover and store organic matter while retaining moisture and disrupting the life cycles of pathogens by temporarily removing their hosts.
- Swaminathan has been called the “**Father of Green Revolution in India**” for his role in introducing and further developing high-yielding varieties of wheat in **India**.
- Verghese Kurien is **known as** the ‘**Father of White Revolution**’ in India. He has immensely contributed in the dairy sector and is also **called** as the ‘milkman of India.
- The **Silver Revolution** is related to the tremendous growth in egg production and was supported by various government and private firms. It took place between 1969-1978 under the ministry of Indira Gandhi. The visionary behind this poultry industry **revolution** was Late Dr. B.V. Rao who is the founder of Venkys.

JNV Previous Years (2007-2021) Questions

- Which one of the following does not add nutrient to the soil ?
(A) Field fallow
(B) Manures/Fertilizers
(C) Crop rotation
(D) Ploughing

JNV Entrance Exam. (Class IX, 2021)

- (A) Field fallow does not add nutrients to the soil but manure, fertilizers, crop rotation and ploughing add nutrients to the soil.
- Which one of the following is a group of Kharif crops ?
(A) Cotton, Gram, Wheat
(B) Gram, Maize, Mustard
(C) Groundnut, Pea, Wheat
(D) Cotton, Maize, Paddy

JNV Entrance Exam. (Class IX, 2021)

- (D) Kharif crops are those which are sown in June-July and harvested in October-September. These crops require lots of water and hot weather to grow. Rice, Jowar, Bajra, Maize, Cotton, Groundnut, Jute, Sugarcane, Turmeric, Pulses (like Urad Dal) *i.e.*, are some of the examples.

- _____ is used in sowing.

- (A) Sickle (B) Hoe
(C) Seed Drill (D) Sprinkler

[JNV Entrance Exam, (08-02-2020)]

- (C) Seed Drills are useful in sowing of seeds.
- The environmental impact of clearing large patches of forests for cultivation of crops is _____.
(A) soil pollution
(B) soil fertility
(C) soil erosion
(D) soil conservation

[JNV Entrance Exam, (08-02-2020)]

- (C) By clearing a large patch of forest for cultivation of crops, the soil erosion may increase. The roots of the trees in a forest bind the particles of molecule together. In the absence of trees, these particles become loose.
- Tree plantation month of July/August every year is known as _____.
(A) van mahotsav
(B) plantation month
(C) forest conservation month
(D) wildlife month

[JNV Entrance Exam, (08-02-2020)]

- (A) Tree plantation month of July/August every year is known as Van Mahotsav.
- Which one of the following is not an essential condition to grow maize ?
(A) Humidity
(B) Low temperature
(C) Rainfall
(D) High temperature

[JNV Entrance Exam, 2019]

- (B) Low temperature is not an essential condition to grow maize. It is a kharif (summer) crop, so, it needs high temperature (above 30°C) for its growth and seed setting.
- Which of the following tools is used by the farmer to remove weeds from the field ?
(A) Hoe (B) Plough
(C) Axe (D) Cultivator

[JNV Entrance Exam, 2019]

- (A) Hoe is used by the farmer to remove weeds from the field. It is an ancient and versatile agricultural and horticultural hand tool to shape soil, remove weeds, etc.
- Clearing of large patches of forests for cultivation of crops may lead to :
(A) soil erosion

- (B) soil pollution
- (C) soil conservation
- (D) soil fertility

[JNV Entrance Exam, 2019]

8. (A) Clearing of land patches of forests for cultivation of crops may lead to soil erosion. It is a process of removal of top fertile soil by various factors like wind, water, etc.

9. Which of the farming method is considered best in hilly areas ?

- (A) Contour farming
- (B) Passed farming
- (C) Jhoom farming
- (D) Strip farming

[JNV Entrance Exam, 2017]

9. (A) Contour farming is considered best in the mountainous parts, because it is cultivated due to the slope on the mountains. Contour farming is the practice of ploughing or cultivating on a slope, following its height contour lines.

10. The primary consumer from the following is :

- (A) Cow
- (B) Goat
- (C) Rat
- (D) All of these

[JNV Entrance Exam, 2017]

10. (D) They all are primary consumers.

11. Which of the following nutrition is provided to soil from fertilizers ?

- (i) Potassium (ii) Iron
- (iii) Nitrogen (iv) Phosphorus
- (A) (i), (ii), (iii) (B) (ii), (iii), (iv)
- (C) (i), (iii), (iv) (D) (i), (ii), (iv)

[JNV Entrance Exam, 2013]

11. (C) Fertilizers provide nutrients like potassium, nitrogen and phosphorus to the soil.

12. Choose the correct option for the more quantity of usage of fertilizers and pesticides in the farms :

- (i) They destroys the fertility of soil

(ii) They barren the farms after some time

(iii) They don't create adverse effect on the beneficial components of soil

(iv) They are environment friendly

- (A) (i) and (ii) (B) (ii) and (iii)
- (C) (i), (ii) and (iii) (D) (ii), (iii) and (iv)

[JNV Entrance Exam, 2013]

12. (A) The fertility of the soil of that field will be destroyed due to the use of large amounts of fertilizer and biopesticides in arable fields. After some time the field may become barren.

13. Choose the correct statement related to fertilizer in farms :

- (i) These have more organic matters and less nutritional elements
- (ii) They increase the water holding capacity of sandy soil
- (iii) They help to extract the extra quantity of water from loamy soil
- (iv) They pollute the environment, because it is made up of the excreted waste of animals.

- (A) (i), (ii) and (iii) (B) (ii), (iii) and (iv)
- (C) (i), (ii) and (iv) (D) (i) and (ii)

[JNV Entrance Exam, 2013]

13. (D) Manure contains a large amount of organic matter and a small amount of nutrients. In such a situation, the ability of sandy soil to hold water increases.

14. Generally, which creature is called as a good friend of farmer ?

- (A) Grasshopper (B) Ant
- (C) Earthworm (D) Honey Bee

[JNV Entrance Exam, 2012]

14. (C) Earthworms are considered a good friend of the farmer. They make the soil fertile by loosening it. By which air and water can enter the earth easily.

15. The modern technique of sowing the seed is :

- (A) By Funnel (B) By Seed Drill
- (C) By Plough (D) By Tilling

[JNV Entrance Exam, 2012]

15. (B) The process of spreading seeds into the soil is called sowing. This is done by conventional tools (funnel shaped tools) or seed drills (using a tractor).

16. Which crop can be replanted ?

- (A) Wheat (B) Rice
- (C) Gram (D) Maize

[JNV Entrance Exam, 2009]

16. (B) Wheat, gram and maize cannot be replanted but the crop of rice can be replanted.

17. Is an example of 'Kharif' crop :

- (A) Maize (B) Wheat
- (C) Gram (D) Pea

[JNV Entrance Exam. (Class-IX) 2008]

17. (A) Maize, rice, cotton etc are kharif crops.

18. Why the crops are sown in rotation in a farm ?

- (A) To increase the fertility of soil
- (B) To save introgen fertilizers
- (C) To help in destroying weeds and insects
- (D) For all of these

[JNV Entrance Exam. (Class-IX) 2008]

18. (D) To increase the ferlility of soil, to save nitrogen fertilizer out to help destroying weeds & insects, crops are sown in reaction.

19. In which year the Argicultural Scientist recruitment board (ASRB) is established ?

- (A) 1970
- (B) 1980
- (C) 1975
- (D) 1973

[JNV Entrance Exam. (Class-IX) 2007]

19. (D) Agricultural scientist recruitment board was established in 1973. Its was established on the recomm- endations of Rajendra Godkar Committee.

Important Questions

1. The order of basic agricultural practice is :

- (i) irrigation
- (ii) preparation of soil
- (iii) application of manures and fertilizers

(iv) sowing of seeds

(v) harvesting

(vi) storage

(vii) weeding

(A) ii, iv, iii, i, vii, v, vi

(B) ii, i, iv, vii, iii, vi, v

(C) ii, iii, iv, vii, vi, i, v

(D) iii, ii, vii, v, iv, i, vi

2. Commercial rearing of silkworms is called :

(A) apiculture

- (B) pisciculture
(C) sericulture
(D) white revolution
3. Which of the following is a cereal crop ?
(A) Wheat (B) Jute
(C) Mustard (D) Sugarcane
4. The agricultural tools used in ploughing are:
(A) plough and khurpi
(B) plough and hoe
(C) khurpi and seed drill
(D) khurpi and harrow
5. Which of the following is not a kharif crop ?
(A) Paddy (B) Groundnut
(C) Cotton (D) Wheat
6. Pick the odd one out:
(A) Hand hoeing (B) Herbicides
(C) Weeding (D) Interculture
7. The chief cereal crop of India is:
(A) wheat (B) sorghum
(C) maize (D) rice
8. Which is the most important source of food and fodder ?
(A) Algae (B) Fungi
(C) Lichen (D) Cereal
9. The element which is required in largest quantity by plants is:
(A) sulphur (B) calcium
(C) nitrogen (D) phosphorus
10. Who is the father of green revolution in India ?
(A) M.S. Ramaiah
(B) Aryabhata
(C) M.S. Swaminathan
(D) Jawahar Lal Nehru
11. Crop grown in India by means of dry farming is:
(A) millets (B) wheat
(C) sugarcane (D) rice
12. India leads the world in the production of:
(A) vegetables (B) flowers
(C) fruits (D) fish
13. Who is the 'father of white revolution' in India ?
(A) M.S. Ramaiah
(B) Aryabhata
(C) M.S. Swaminathan
(D) V. Kurian
14. Combines are used for:
(A) threshing
(B) harvesting
(C) separation of grains
(D) all of the above
15. Silver revolution refers to:
(A) eggs (B) milk
(C) oyster pearls (D) honey
16. Ploughing is also known as:
(A) tilling (B) sowing
(C) threshing (D) manuring
17. Growing of two or more different crops together is called:
(A) crop rotation
(B) mixed cropping
(C) fallowing
(D) monocropping
18. The process of leaving the field uncultivated is called:
(A) water logging (B) irrigation
(C) fallowing (D) nursery
19. Compost is rich in which nutrient ?
(A) Organic compounds
(B) Nitrogen
(C) Inorganic compounds
(D) Potassium
20. When plants of the same kind are cultivated at one place on a large scale, it is called:
(A) Crops (B) Rabi crops
(C) Kharif crops (D) None of these
21. Name the crops which are grown in rainy season:
(A) Crops (B) Rabi crops
(C) Kharif crops (D) None of these
22. Name the crops which are grown in winter season:
(A) Crops (B) Rabi crops
(C) Kharif crops (D) None of these
23. The rainy season in India is generally starts from:
(A) June to September
(B) October to March
(C) March to June
(D) None of the above
24. The winter season in India is generally starts from:
(A) June to September
(B) October to March
(C) March to June
(D) None of the above
25. The branch of agriculture which deals with the rearing of animals-livestock is called:
(A) Animal husbandry
(B) Sericulture
(C) Sowing
(D) Crop rotation
26. The supply of water to crops at regular intervals is called:
(A) Crop rotation (B) Irrigation
(C) Manure (D) None of these
27. Name the substances which are added to the soil in the form of nutrients for the healthy growth of plants:
(A) Manure (B) Garbage
(C) Sowing (D) None of these
28. Name the crops which are grown in the summer season:
(A) Zaid crops (B) Rabi crops
(C) Kharif crops (D) None of these
29. The summer season in India is generally starts from:
(A) June to September
(B) October to March
(C) March to June
(D) None of the above
30. Paddy and maize are the examples of:
(A) Zaid crops (B) Rabi crops
(C) Kharif crops (D) None of these
31. Wheat, gram is the example of:
(A) Zaid crops (B) Rabi crops
(C) Kharif crops (D) None of these
32. Vegetables and seasonable fruits are the example of:
(A) Zaid crops (B) Rabi crops
(C) Kharif crops (D) None of these
33. Name the process of loosening and turning of the soil:
(A) Ploughing (B) Sowing
(C) Weaving (D) None of these
34. Name the tool which is used for removing weeds:
(A) Sickle (B) Spade
(C) Hoe (D) None of these
35. Weeds are controlled by using certain chemicals called:
(A) Weedicide (B) Winnowing
(C) Sowing (D) None of these
36. Name the method which is used for replenishing the soil with nutrients:
(A) Sowing (B) Crop rotation
(C) Fertilizer (D) Manure
37. Name the traditional method which is used for irrigation:
(A) Pulley system
(B) Lever system
(C) Dhekli
(D) All of these
38. Name the modern method which is used for irrigation:
(A) Sprinkler system
(B) Drip system
(C) Both of these
(D) None of these
39. The cutting of crop after mature is called:
(A) Sowing (B) Weed
(C) Harvesting (D) None of these

Answer Key

1. (A) 2. (C) 3. (A) 4. (B) 5. (D)
6. (B) 7. (D) 8. (D) 9. (C) 10. (C)
11. (A) 12. (C) 13. (D) 14. (D) 15. (A)
16. (A) 17. (B) 18. (C) 19. (A) 20. (A)
21. (C) 22. (B) 23. (A) 24. (B) 25. (A)
26. (B) 27. (A) 28. (A) 29. (C) 30. (C)
31. (B) 32. (A) 33. (A) 34. (C) 35. (A)
36. (B) 37. (D) 38. (C) 39. (C)

