ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

MCQ Examination August (2020-2021)

CLASS 12 - ENGLISH CORE

English

Time Allowed: 40 minutes **Maximum Marks: 40**

1. Why was the peddler not used to warm welcomes, such as the old man's or Edla's, in general? **(The Rattrap)** **[1]**

   a) Because he always robbed others
   b) Because he was regarded as a lowly being
   c) Because he never asked for help
   d) Because he did not treat others properly

2. In the prose **The Rattrap**, what do you understand by the character sketch of Edla Willmansson? **[1]**

   a) She is extremely cruel
   b) She is a generous and kind-hearted person
   c) She wears a face of being good
   d) She is a person of low regards

3. What did the host and the guest play after dinner at the little gray cottage in **The Rattrap**? **[1]**

   a) A game of cards named mjölis
   b) A game of cards named Sueca
   c) A game of cards named Kille
   d) A game of cards named Vändtia

4. "You may be sure, Captain, that you will be allowed to leave us just as freely as you came. Only please stay with us over Christmas Eve." **[1]**
   Who made this statement?

   a) Edla
   b) Ironmaster
   c) Peddler
   d) Old man

5. Why did Edla request her father to let the stranger stay at their place for Christmas Eve in **The Rattrap**? **[1]**

   a) She felt it would be rude to send away a person who was invited
   b) She thought he might create trouble outside if they make him leave
   c) She planned to hand him over to the police after Christmas
   d) She wanted to give him work during Christmas

6. Why did the old man quit his job as a crofter from the Ramsjö Ironworks? **(The Rattrap)** **[1]**

   a) Because he was not doing well
   b) Because he was unable to do day labour being aged
   c) Because he was unable to go to work
   d) Because he was fired by the ironmaster

7. In the prose **The Rattrap**, why did the peddler refer to himself as the Captain in the letter? **[1]**

a) He wished to behave as a true captain
b) He was the Captain
c) He wanted to be a Captain someday
d) He disguised himself as the Captain

8. Why was the peddler welcomed happily by the old man at his cottage in the prose **The Rattrap**? **[1]**

a) The old man was happy to get a companion
b) The old man wanted to trap him
c) Because the old man knew him
d) Because the old man had invited him

9. Who is the author of the text **The Rattrap**? **[1]**

a) Louis Fischer
b) Anees Jung
c) Selma Lagerlöf
d) A. R. Barton

10. In **The Rattrap**, how much did the old man earn as his payment by providing his cow's milk to the creamery? **[1]**

a) Twenty kronor
b) Thirty kronor
c) Thirteen kronor
d) Forty kronor

11. Why was the ironmaster determined to take the peddler to his place? **[1]**

a) Because he wanted to have a companion to talk to in his loneliness
b) Because he wanted to help his old friend
c) Because he wanted to punish him for stealing
d) Because he wanted to hand him over to the police

12. In the prose **The Rattrap**, why did it give the peddler unwonted joy to think ill of the world? **[1]**

a) Because the world was a bad place
b) Because everyone despised the world
c) Because the world thought ill of him
d) Because the world had never been kind to him

13. With whom the old man live in his cottage? **[1]**

a) He lived with his wife.
b) He lived with his servant.
c) He lived alone there.
d) He lived with his children.

14. In **The Rattrap**, what does the author mean by the phrase **to keep body and soul together**? **[1]**

a) The peddler's struggle to find the right path in the woods
b) The peddler's intention to stay away from the authorities
c) The peddler's struggle to stay alive
d) The peddler's struggle to find a shelter

15. Who was described as wicked according to the poet in the poem, **An elementary school classroom in a slum**? **[1]**

a) The governors
b) The slum children

c) Shakespeare
d) The visitors

16. What is the theme of the poem 'An Elementary School Classroom in a Slum'? **[1]**

a) poverty
b) social injustice and class inequality.
c) social structure of the society
d) education

17. What impression do you get from the physical appearance of the slum children? **[1]**

a) They seemed malnourished
b) They lacked enthusiasm
c) They were exhausted
d) All of these

18. According to a poet who could have a positive impact on the lives of the slum children? **[1]**

a) The visitors
b) All of these
c) The inspectors
d) The governors

19. "History is theirs whose language is the sun." ..Which poetic device is used in this line? **[1]**

a) alliteration
b) personification
c) metaphor
d) simile

20. What does the poet appeal to break in the poem, **An elementary school classroom in a slum**? **[1]**

a) Shackles of poverty
b) Social atrocities
c) All of these
d) Barriers in their path of progress

21. What does the poet want for the slum children? **[1]**

a) he wants the authorities to look after their needs
b) social equality and justice
c) jobs in good companies
d) food and shelter

22. What is the message conveyed in the poem "An Elementary School Classroom in a Slum"? **[1]**

a) develop art, culture and literature in the society.
b) progress and development between two different gropus of the society.
c) breaking the barrier between rich and poor.
d) contrast between two incompatible worlds.

23. Who composed the poem, **A thing of beauty**? **[1]**

a) Robert Frost
b) Pablo Neruda
c) Stephen Spender
d) John Keats

24. The loveliness of a thing of beauty _____ with the passage of time. **(A Thing of Beauty)** **[1]**

a) Increases
b) Vanishes
c) Diminishes
d) Gets divided

25. How do 'daffodils' and 'rills' enrich the environment? **[1]**

a) they provide us water for irrigation.
b) Daffodils spread the fragrance.
c) They give greenery around us and
d) animals drink water from the

cool the environment. streams.

26. What does the bower provide to mankind? **(A thing of beauty)** **[1]**

a) Pleasant dreams b) Good health

c) All of these d) Sound sleep

27. _____ removes the pall from our dark spirits. **[1]**

a) snowfall b) nature

c) flowery wreath d) sunshine

28. What is seen to be growing extensively in the mid forest bushes? **(A thing of beauty)** **[1]**

a) Musk roses b) Wild roses

c) Musk melons d) Red roses

29. How has the poet defined a thing of beauty? **[1]**

a) Pain forever b) Joy forever

c) Sorrow forever d) Pride forever

30. Why do we weave a flowery band? **(A thing of beauty)** **[1]**

a) To gift it b) To connect with the earth

c) To sell it d) To wear it

31. Why did Hana help Dr Sadao in treating the wounded enemy soldier? **[1]**

a) Because she liked the American soldier b) As Dr. Sadao was not perfectly skilled

c) Because Hana was an impeccable wife d) Because she was persuing nursing

32. Why did Dr. Sadao treat the wounded enemy soldier? **[1]**

a) Because once this American soldier was his friend in America b) He wanted to create a new experience

c) Being a doctor, it was his duty d) So that he could earn money from the enemy soldier

33. How did the servants react when Dr Sadao told them about the wounded American soldier? **[1]**

a) Impressed by Dr. Sadao b) Very aggressive

c) Started hating Sadao's family d) Shocked and terrified

34. Why did Sadao Hoki go to America? **[1]**

a) In search of new friends b) To study surgery and medicine

c) To explore America d) To settle in America

35. For what reason the messenger was sent to Dr. Sadao's house by the old General? **[1]**

a) The old General was in pain b) The general was missing Dr. Sadao

c) The general wanted Dr. Sadao to d) The general wanted Dr. Sadao to be

leave the place immediately

arrested

36. Why did Sadao wait to fall in love with Hana? **[1]**

a) He wanted to know her financial condition first

b) He wanted to make sure that she was Japanese first.

c) He was not having feelings for her earlier

d) He wanted to test her loyalty first

37. What did Dr. Sadao do to get rid of the man? **[1]**

a) By throwing the American into the ocean

b) By making complaint against the American

c) By secretly sending the American to an isolated with essential things

d) By killing the American

38. Why did Sadao tell the general about the enemy? **(American man)** **[1]**

a) He was very much scared of the American man

b) So that he would get reward for it

c) So that his own family would not be harmed by the Japanese army

d) Because he was not able to operate him

39. Why did Sadao and Hana not marry in America? **[1]**

a) It was Sadao's dream to get married in Japan

b) Sadao wanted Hana to change her religion

c) Hana didn't like that country(America)

d) He wanted his father's permission and blessings.

40. What help did Dr. Sadao seek from Hana while operating on the wounded man? **[1]**

a) To give medicines on time

b) To clean the wounds regularly

c) To bring the towels and give anesthesia to the patient

d) To give food to the patient

ATOMIC ENERGY CENTRAL SCHOOL NO.4 Rawatbhata

MCQ Examination September (2020-2021)

CLASS 12 - हिंदी कोर

Hindi Core

Time Allowed: 40 minutes **Maximum Marks: 40**

1. रघुवीर सहाय की कौन सी कविता आधुनिक हिंदी कविता की एक महत्वपूर्ण रचना मानी जाती है ? **[1]**

   a) कैमरे में बंद अपाहिज b) आत्महत्या के विरुद्ध

   c) एक समय था d) रामदास

2. **कैमरे में बंद अपाहिज** कविता में अपाहिज को अपाहिज कहना मीडियाकर्मी की किस बात को दर्शाता है? **[1]**

   a) संवेदनशीलता b) दानवीरता

   c) सहनशीलता d) संवेदनहीनता

3. **कैमरे में बंद अपाहिज** कविता में फूली हुई आँख की तस्वीर दिखाने का क्या तात्पर्य है? **[1]**

   a) पीड़ा की अभिव्यक्ति b) गुमराह करना

   c) खुशी की अभिव्यक्ति d) आँख दिखाना

4. **कैमरे में बंद अपाहिज** कविता के अनुसार कार्यक्रम का मुख्य उद्देश्य क्या था? **[1]**

   a) करुणा जगाना b) क्रूरता दिखाना

   c) सहायता करना d) प्रेरित करना

5. रघुवीर सहाय की कविता 'कैमरे में बंद अपाहिज' किस काव्य संग्रह से संकलित है? **[1]**

   a) लोग भूल गए हैं b) आत्महत्या के विरुद्ध

   c) एक समय था d) सीढ़ियों पर धूप

6. रघुवीर सहाय किस सप्तक के कवि है? **[1]**

   a) प्रथम सप्तक b) तार सप्तक

   c) तीसरा सप्तक d) दूसरा सप्तक

7. **कैमरे में बंद अपाहिज** कविता के अनुसार कार्यक्रम में अपाहिज को रुलाने से क्या होगा? **[1]**

   a) सहायता b) रोचकता बढ़ेगी

   c) क्रूरता d) संवेदनशीलता

8. रघुवीर सहाय की मृत्यु कहाँ हुई थी? **[1]**

   a) आगरा b) दिल्ली

   c) ग्वालियर d) भोपाल

9. **कैमरे में बंद अपाहिज** कविता के अनुसार किसी व्यक्ति की पीड़ा को टेलीविजन पर दिखाने वाले का स्वभाव कैसा होना चाहिए? **[1]**

   a) कारोबारी b) संवेदनशील

   c) क्रूर d) संवेदनहीन

10. **कैमरे में बंद अपाहिज** कविता में **हम समर्थ शक्तिमान** किसके लिए प्रयुक्त किया गया है? **[1]**

a) साक्षात्कारकर्ता/मिडियाकर्मी
b) एक आम आदमी
c) अपाहिज
d) दूरदर्शन

11. रघुवीर सहाय ने कविता को क्या दिया है? **[1]**

a) कहानीपन और नाटकीय वैभव
b) सहज शैली
c) बातचीत
d) बेलौस भाषा

12. **कैमरे में बंद अपाहिज** कविता में साक्षात्कारकर्ता के मुस्कान में क्या छिपा हुआ है? **[1]**

a) धैर्य
b) दर्द
c) व्यंग्य
d) करुणा

13. **कैमरे में बंद अपाहिज** कविता में दूरदर्शन पर अपाहिज व्यक्ति को क्या माना जाता है? **[1]**

a) एक शक्तिमान
b) एक मेहमान
c) एक महत्वपूर्ण व्यक्ति
d) प्रदर्शन की वस्तु

14. मुक्तिबोध ने अपनी कविता **सहर्ष स्वीकारा है** में खिलते हुए चेहरे की तुलना किससे की है? **[1]**

a) मुसकाता चाँद
b) ममता
c) झरना
d) धरती

15. मुक्तिबोध किस आंदोलन के अगुआ कवि थे? **[1]**

a) प्रगति वाद
b) नयी कविता
c) द्विवेदी युग
d) छायावाद

16. **सहर्ष स्वीकारा है** कविता में परिवेष्टित शब्द का क्या अर्थ है? **[1]**

a) रमणीय दृश्य
b) आत्मीयता
c) गुफा
d) चारों ओर से घिरा हुआ

17. 'सहर्ष स्वीकारा है' कविता में कवि अपनी प्रिय से क्या दंड माँग रहा है? **[1]**

a) प्रिय से विमुक्त होने का
b) प्रिय से मिलने का
c) एकाकीपन में जीने का
d) आत्मशक्ति पाने का

18. **सहर्ष स्वीकारा है** कविता में कवि ने किसमें लापता होने की बात की है? **[1]**

a) चाँदनी में
b) झरने में
c) पानी के सोते में
d) धुएं के बादलों में

19. **सहर्ष स्वीकारा है** में सहर्ष स्वीकारना का क्या अर्थ है? **[1]**

a) खुशी खुशी स्वीकार करना
b) स्वीकार नहीं करना
c) स्वीकारना
d) सुख और दुख

20. मुक्तिबोध की सबसे लंबी रचना क्या है? **[1]**

a) विपात्र
b) काठ का सपना
c) अँधेरे में
d) सहर्ष स्वीकारा है

21. 'सहर्ष स्वीकारा है' कविता में कवि क्या भूलना चाहता है? **[1]**

a) प्रेयसी के खिले हुए चहरे को
b) भीतर की सरिता
c) गरीबी
d) विचार वैभव

22. मुक्तिबोध के अनुसार संवेदना कैसी होनी चाहिए? **[1]**

a) जाग्रत और अपलक
b) गरीबी
c) ममता का बादल
d) गंभीर अनुभव

23. **सहर्ष स्वीकारा है** कविता में **गुहाओं** शब्द का क्या अर्थ है? **[1]**

a) बादल
b) गुफाओं
c) बिल
d) झरना

24. एक साहित्यिक की डायरी किसकी रचना है? **[1]**

a) मुक्तिबोध
b) रघुवीर सहाय
c) केदारनाथ सिंह
d) आलोकधन्वा

25. 'रहने की रमणीय उजेला अब' पंक्ति में 'रमणीय उजेला' किसके समान है? **[1]**

a) चाँद के
b) स्नेह की निरंतरता
c) आत्मीयता
d) पूर्णिमा की चाँदनी

26. **सहर्ष स्वीकारा है** कविता में मुक्तिबोध ने किसमे नहाने की बात कही है? **[1]**

a) अमावस्या
b) झरना
c) बारिश
d) पानी

27. फणीश्वर नाथ रेणु की मृत्यु कहाँ हुई थी? **[1]**

a) इलाहाबाद
b) कलकत्ता
c) पटना
d) कानपुर

28. "जीते रहो, बहादुर ! तुमने मिट्टी की लाज़ रख ली।"- यह कथन किसने किससे कहा था? **[1]**

a) राजा साहब ने लुट्टन से
b) राज पंडितों ने चाँद सिंह से
c) बादल सिंह ने चाँद सिंह से
d) मैनेजर ने लुट्टन से

29. **पहलवान की ढोलक** कहानी के अनुसार श्यामनगर के महाराज किसको दरबार में रखने की बात कर रहे थे? **[1]**

a) मैनेजर साहब
b) बादल सिंह
c) लुट्टन सिंह
d) चाँद सिंह

30. **पहलवान की ढोलक** कहानी में ढोलक की धुन **चट्-गिड़-धा** का किस अर्थ में प्रयोग किया गया है? **[1]**

a) वाह बहादुर
b) वाह पट्ठे
c) उठा पटक दे
d) मत डरना

31. "अरे क्या करोगी रोककर,दुलहिन ! जो गया सो चला गया, वह तुम्हारा नहीं था, वह जो है उसको तो देखो। -यह कथन किसका है? **[1]**

a) लुट्टन पहलवान का
b) मैनेजर साहब का
c) राजा साहब का
d) बादल सिंह का

32. **पहलवान की ढोलक** कहानी में **शेर के बच्चे** की उपाधि किसको प्राप्त थी? **[1]**

a) लुट्टन सिंह
b) चाँद सिंह
c) बादल सिंह
d) मैनेजर साहब

33. **पहलवान की ढोलक** कहानी के अनुसार राजा साहब की जगह नए राजकुमार का आना क्या है? **[1]**

a) एक षड्यंत्र
b) पूरी व्यवस्था का पलट जाना
c) एक समस्या
d) सत्ता परिवर्तन

34. निम्न में से कौन सा रेणु का उपन्यास है? **[1]**

a) वनतुलसी की गंध
b) ठुमरी
c) दीर्घतपा
d) नेपाली क्रांति कथा

35. **पहलवान की ढोलक** कहानी में पहलवान की ढोलक ने महामारी के समय लोगों की किस प्रकार सहायता की? **[1]**

a) आत्मविश्वास देकर
b) उपचार करके
c) मारकर
d) और बीमार करके

36. निम्न में से कौन सा रेणु का संस्मरण है? **[1]**

a) आदिम रात्रि की महक
b) वनतुलसी की गंध
c) मैला आँचल
d) नेपाली क्रांति कथा

37. **पहलवान की ढोलक** कहानी के अनुसार किसानों के बच्चे किस कारण से कुश्ती नहीं कर सकते थे? **[1]**

a) समय का अभाव
b) नापसंद होने के कारण
c) गरीबी के कारण
d) अहंकार के कारण

38. रेणु द्वारा लिखित कौन सा कहानी संग्रह नहीं है? **[1]**

a) ठुमरी
b) दीर्घतपा
c) अग्निखोर
d) आदिम रात्रि की महक

39. 'पहलवान की ढोलक' कहानी में पहलवान का गुरु कौन था? **[1]**

a) बादल सिंह
b) ढोल
c) श्याम सिंह
d) चाँद सिंह

40. लुट्टन के माता-पिता उसे किस उम्र में अनाथ बना कर चल बसे थे? **[1]**

a) आठ वर्ष
b) दस वर्ष
c) नौ वर्ष
d) ग्यारह वर्ष

ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

MCQ Examination September (2020-2021)

CLASS 12 - MATHEMATICS

Mathematics

Time Allowed: 50 minutes **Maximum Marks: 40**

General Instructions:

Please do not switch over other screen during quiz.

Please do not refresh the page during the quiz.

1. Let $f(x) = \begin{cases} \frac{x^4-5x^2+4}{|(x-1)(x-2)|} & x \neq 1, 2 \\ 6 & , \quad x = 1 \\ 12 & , \quad x = 2 \end{cases}$ Then, f(x) is continuous on the set **[1]**

   a) R - {2}

   b) R

   c) R - {1}

   d) R - {1 - 2}

2. Let f(x) = | x - 1 |, then **[1]**

   a) f (x + y) = f (x) + f(y)

   b) f(| x |) = | f(x) |

   c) $f(x^2) = (f(x))^2$

   d) f (x) is not derivable at x = 1.

3. If $y = \sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$, then $\frac{dy}{dx} =$ **[1]**

   a) $-\frac{2}{1+x^2}$

   b) $\frac{2}{2-x^2}$

   c) $\frac{2}{1+x^2}$

   d) $\frac{1}{2-x^2}$

4. If $y = \frac{e^x-e^{-x}}{e^x+e^{-x}}$, then $\frac{dy}{dx}$ is equal to **[1]**

   a) $1 + y^2$

   b) None of these

   c) $1 - y^2$

   d) $y^2 + 1$

5. The derivative of $\sec^{-1}\left(\frac{1}{2x^2+1}\right)$ with respect to $\sqrt{1+3x}$ at x = $\frac{-1}{3}$ **[1]**

   a) 0

   b) $\frac{1}{2}$

   c) does not exist

   d) $\frac{1}{3}$

6. If $x = t^2, y = t^3$ then $\frac{d^2y}{dx^2}$ is **[1]**

   a) $\frac{3}{2}$

   b) $\frac{3}{4}$

   c) $\frac{3}{2t}$

   d) $\frac{3}{4t}$

7. The derivative of f(x) = | x | at x = 0 is **[1]**

   a) 1

   b) – 1

   c) All of these

   d) None of these

8. The set of points where the function f(x) = x | x | is differentiable is **[1]**

a) $(-\infty, 0) \cup (0, \infty)$ b) $[0, \infty]$

c) $(0, \infty)$ d) $(-\infty, \infty)$

9. If x sin (a + y) = sin y, then $\frac{dy}{dx}$ is equal to **[1]**

a) $\frac{\sin a}{\sin(a+y)}$ b) $\frac{\sin^2(a+y)}{\sin a}$

c) $\frac{\sin a}{\sin^2(a+y)}$ d) $\frac{\sin(a+y)}{\sin a}$

10. If x = acos^{3}t, y = asin^{3}t, then $\frac{dy}{dx}$ is equal to **[1]**

a) – tan t b) cosec t

c) cos t d) cot t

11. If $y = \sqrt{\sin x + y}$ then $\frac{dy}{dx}$ is equal to **[1]**

a) $\frac{\cos x}{2y-1}$ b) $\frac{\sin x}{1-2y}$

c) $\frac{\cos x}{1-2y}$ d) $\frac{\sin x}{2y-1}$

12. If y = a + bx^2, a, b arbitrary constants, then **[1]**

a) $x\frac{d^2y}{dx^2} - \frac{dy}{dx} + y = 0$ b) $x\frac{d^2y}{dx^2} = 2xy$

c) $\frac{d^2y}{dx^2} = 2xy$ d) $x\frac{d^2y}{dx^2} = y_1$

13. In case of strict increasing functions, slope of the tangent and hence derivative is **[1]**

a) either positive or zero b) zero

c) positive d) negative

14. If y = (sin^{-1} x)^2, then (1 - x^2) y$_2$ is equal to **[1]**

a) -xy$_1$ + 2 b) none of these

c) xy$_1$ + 2 d) xy$_1$ - 2

15. If f(x) = $|\log_e x|$, then **[1]**

a) f'(1) = –1 b) f'(1) = 1

c) f'(1$^-$) = –1 d) f'(1$^+$) = 1

16. If $y = \frac{2}{\sqrt{a^2-b^2}}\tan^{-1}\left(\frac{a-b}{a+b}\tan\frac{x}{2}\right)$, a > b > 0, then **[1]**

a) $y_2 = \frac{-b\sin x}{(a-b\cos x)^2}$ b) $y_1 = \frac{-1}{a+b\cos x}$

c) $y_2 = \frac{b\sin x}{(a+b\cos x)^2}$ d) $y_1 = \frac{1}{a-b\cos x}$

17. If f(x) = $\frac{\sin^{-1} x}{\sqrt{1-x^2}}$, then (1 - x^2) f''(x) - xf(x) = **[1]**

a) none of these b) 0

c) 1 d) -1

18. If y = a sin mx + b cos m x, then $\frac{d^2y}{dx^2}$ is equal to **[1]**

a) my_1

b) None of these

c) $-m^2y$

d) m^2y

19. $\frac{d}{dx}\left\{\tan^{-1}\left(\frac{\cos x}{1+\sin x}\right)\right\}$ equal **[1]**

a) -1

b) 1

c) -1/2

d) 1/2

20. f(x) = $|\log_e |x||$, then **[1]**

a) f(x) is continuous and differentiable for all x in its domain

b) f(x) is continuous for all x in its domain but differentiable at x = ± 1

c) none of these

d) f(x) is neither continuous nor differentiable at x = ± 1

21. The function f(x) = cos x -2 λx is monotonic decreasing when **[1]**

a) $\lambda > 2$

b) $\lambda < 1/2$

c) $\lambda > 1/2$

d) $\lambda < 2$

22. Let f (x) =x^3, then f (x) has a **[1]**

a) point of inflexion at x = 0

b) local maxima at x = 0

c) none of these

d) local minima at x = 0

23. The point on the curve y = 12x - x^2 where the slope of the tangent is zero will be **[1]**

a) (6, 36)

b) (0, 0)

c) (3, 9)

d) (2, 16)

24. If s = t^3 - $4t^2$ + 5 describes the motion of a particle, then its velocity when the acceleration vanishes, is **[1]**

a) 16/9 unit /sec

b) -32/3 unit/sec

c) -16/3 unit/sec

d) 4/3 unit/sec

25. A man of height 6 ft walks at a uniform speed of 9 ft/sec from a lamp fixed at 15 ft height. The length of his shadow is increasing at the rate of **[1]**

a) 15 ft/sec

b) 6ft/sec

c) 9ft/sec

d) none of these

26. The function f(x) = $\cot^{-1}$ x +x increases in the interval **[1]**

a) 0 , ∞

b) $-\infty$,∞

c) (1 ,∞)

d) -1 , ∞

27. Let f(x) = x^3 + ax^2 + bx + 5 sin x^2 be an increasing function on the set R. Then, a and b satisfy **[1]**

a) $a^2 - 3b + 15 > 0$

b) a>0 and b>0

c) $a^2 - 3b + 15 < 0$

d) $a^2 - 3b - 15 > 0$

28. If the radius of a sphere is measured as 9 m with an error of 0.03 m, then find the **[1]**

approximate error in calculating the surface area

a) $1.16\pi \quad m^2$ b) $1.08\pi \quad m^2$

c) $2.16\pi \; m^2$ d) None of these

29. Function f(x) = x^3 - 27 x + 5 is monotonically increasing when **[1]**

a) $x \leq -3$ b) |x| > 3

c) x < -3 d) $|x| \geq 3$

30. The curve y = $a\ x^3 + bx^2 + c\ x$ is inclined at 45° to the X – axis at (0, 0) but it touches X – axis at (1, 0) , then the values of a, b, c, are given by **[1]**

a) a = 1, b = – 2, c = 1 b) a = 1, b = 1, c = – 2

c) a = – 2, b = 1, c = 1 d) a = – 1, b = 2, c = 1.

31. The function f(x) = $2x^3$ - $3x^2$ - 12x + 4, has **[1]**

a) one maxima and one minima b) no maxima or minima

c) two points of local minimum d) two points of local maximum

32. Function f(x) = $\log_a$ x is increasing on R , if **[1]**

a) a < 1 b) 0 < a < 1

c) a > 1 d) a> 0

33. The equation of the normal to the curve y = sinx at (0, 0) is **[1]**

a) x – y = 0 b) x = 0

c) x + y = 0 d) y = 0

34. The minimum value of f(x) = $3x^4$ - $8x^3$ - 48x + 25 on [0, 3] is **[1]**

a) 25 b) 16

c) -39 d) None of these

35. If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + }}} \ldots \infty$ then $\frac{dy}{dx}$ = ? **[1]**

a) $\frac{\sin x}{(2y-1)}$ b) $\frac{\cos x}{(y-1)}$

c) $\frac{\cos x}{(2y-1)}$ d) None of these

36. If the function f(x) $= \begin{cases} \frac{\sin^2 ax}{x^2}, \text{ when } x \neq 0 \\ k, \text{ when } x = 0 \end{cases}$ is continuous at x = 0 then k = ? **[1]**

a) -4 b) a

c) -2 d) a^2

37. f(x) $= \frac{x}{(x^2+1)}$ is increasing in **[1]**

a) None of these b) $(-1, \infty)$

c) $(-\infty, -1) \cup (1, \infty)$ d) (-1, 1)

38. If y = $\tan^{-1}$ (sec x + tan x) then $\frac{dy}{dx} =$? **[1]**

a) None of these

b) $\frac{1}{2}$

c) 1

d) $\frac{-1}{2}$

39. If $x = a(\cos\theta + \theta\sin\theta)$ and $y = a(\sin\theta - \theta\cos\theta)$ $\frac{dy}{dx} = ?$ **[1]**

a) a cot θ

b) cot θ

c) tan θ

d) a tan θ

40. Let x, y be two variables and x > 0, xy = 1 then minimum value of x + y is **[1]**

a) 2

b) $2\frac{1}{2}$

c) $3\frac{1}{3}$

d) 1

ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

MCQ Examination September (2020-2021)

CLASS 12 - PHYSICS

Physics

Time Allowed: 40 minutes **Maximum Marks: 40**

1. Kirchhoff's first law, i.e., $\Sigma I = 0$ at a junction, deals with the conservation of **[1]**

   a) Energy
   b) Momentum
   c) Angular momentum
   d) Charge

2. A potentiometer has a uniform wire of length 10m and resistance 5 ohms. The potentiometer is connected to an external battery of emf of 10V and negligible internal resistance and a resistance of 995 ohms in series. The potential gradient along the wire is **[1]**

   a) 1 mV/cm
   b) 5 mV/cm
   c) 1 mV/m
   d) 5 mV/m

3. If the electric current in a lamp decreases by 5%, then the power output decreases by **[1]**

   a) 20%
   b) 25%
   c) 5%
   d) 10%

4. Which of the following characteristics of electrons determines the current in a conductor? **[1]**

   a) Both drift velocity and thermal velocity.
   b) Neither drift nor thermal velocity.
   c) The thermal velocity alone.
   d) Drift velocity alone.

5. Potentiometer is **[1]**

   a) none of these
   b) basically a long piece of uniform wire
   c) basically a loop of uniform wire
   d) basically a pair of uniform wires

6. The resistance of a metallic conductor increases due to **[1]**

   a) Change in dimensions of the conductor
   b) Change in carrier density
   c) Increase in the number of collisions between the carriers
   d) Increase in the rate of collisions between the carriers and vibrating atoms of the conductor

7. Mobility is defined as **[1]**

   a) the number of charges in motion per unit electric field
   b) the magnitude of the drift velocity per unit voltage
   c) the magnitude of the drift velocity per unit charge
   d) the magnitude of the drift velocity per unit electric field

8. A Wheatstone bridge is balanced for four resistors R_1, R_2, R_3 and R_4 with a Lechlanche cell between A and C and a galvanometer between B and D. The positions of the cell and the galvanometer are interchanged. The balance will **[1]**

a) Change and can be obtained by changing R_1

b) decrease by about 9%

c) Change and can be obtained by changing R_4

d) Not change

9. A battery is connected with a potentiometer wire. The internal resistance of the battery is negligible. If the length of the potentiometer wire is kept same and radius is doubled then how does potential gradient vary? **[1]**

a) Potential gradient becomes half

b) None of these

c) Potential gradient does not change

d) Potential gradient becomes two times

10. A piece of copper and another of germanium are cooled from room temperature to 80K. The resistance of **[1]**

a) each of them increases

b) each of them decreases

c) copper increases and that of germanium decreases

d) copper decreases and that of germanium increases

11. The instrument for the accurate measurement of the e.m.f. of a cell is **[1]**

a) A potentiometer

b) An ammeter

c) A voltmeter

d) A slide wire bridge

12. To get maximum current in a resistance of 3 ohm, one can use n rows of m cells (connected in series), connected in parallel. If the total number of cells is 24 and the internal resistance of a cell is $0 \cdot 5$ ohm, then **[1]**

a) m = 2, n = 12

b) m = 12, n = 2

c) m = 6, n = 4

d) m = 8, n = 3

13. The wire of the potentiometer has resistance 4 ohms and length 1 m. It is connected to a cell of e.m.f. 2 volts and internal resistance 1 ohm, if a cell of e.m.f. 1.2 volt is balanced by it, the balancing length will be **[1]**

a) 60 cm

b) 50 cm

c) 90 cm

d) 75 cm

14. According to Kirchhoff's Loop Rule, **[1]**

a) The absolute sum of changes in potential around any closed loop must be zero.

b) The algebraic sum of changes in potential around any closed loop must be zero.

c) The algebraic sum of changes in potential around any closed loop

d) The algebraic sum of changes in potential around any closed loop

must be positive.

must be negative.

15. Drift is the random motion of the charged particles within a conductor, **[1]**

a) along with a very slow net motion in the opposite direction of the field

b) along with accelerated motion in the direction of the field

c) along with a decelerated motion in the direction of the field

d) along with zero motion in the direction of the field

16. A uniform electric field and a uniform magnetic field are produced, pointed in the same direction. When an electron is projected with its velocity pointed in the same direction, **[1]**

a) the electron velocity will decrease in magnitude

b) the electron velocity will increase in magnitude

c) the electron will turn to its left

d) the electron will turn to its right

17. A wire of length 2m carries a current of 1 ampere is bend to form a circle. The magnetic moment of the coil is **[1]**

a) 2π

b) $\frac{\pi}{4}$

c) $\frac{1}{\pi}$

d) $\frac{\pi}{2}$

18. The magnetic field due to a current-carrying circular loop of radius 3 cm at a point on the axis at a distance of 4 cm from the centre is 54 μT. What will be its value at the centre of the loop? **[1]**

a) 125 μT

b) 75 μT

c) 250 μT

d) 150 μT

19. A galvanometer of resistance 25Ω is shunted by a 2.5Ω wire. The part of total current I_0 that flows through the galvanometer is given by **[1]**

a) $\frac{I}{I_0} = \frac{2}{11}$

b) $\frac{I}{I_0} = \frac{4}{11}$

c) $\frac{I}{I_0} = \frac{1}{11}$

d) $\frac{I}{I_0} = \frac{3}{11}$

20. An ammeter has resistance R_0 and range I. What resistance should be connected in parallel to it with increase the range to nI? **[1]**

a) None of these

b) $\frac{R_o}{n}$

c) $\frac{R_o}{n-1}$

d) $\frac{R_o}{n+1}$

21. The electric current in a circular coil of two turns produces a magnetic induction of 0.2 T at its centre. The coil is unwound and is rewound into a circular coil of four turns. The magnetic induction at the centre of the coil now is, in tesla **[1]**

a) 0.8

b) 0.4

c) 0.6

d) 0.2

22. The scale of a galvanometer of resistance 100Ω contains 25 divisions. It gives a deflection of one division on passing a current of $4 \times 10^{-4} A$. The resistance in ohms to be added to it so that it may become a voltmeter of range 2.5 volt is **[1]**

a) 100

b) 250

c) 300 d) 150

23. Two long parallel wires P and Q are held perpendicular to the plane of the paper with distance of 5 m between them. If P and Q carry current of 2.5 A and 5A respectively in the same direction, then the magnetic field at a point half way between the wire is **[1]**

a) $\frac{\sqrt{3}\mu_0}{\pi}$ b) $\frac{\mu_0}{\pi}$

c) $\frac{3\mu_0}{2\pi}$ d) $\frac{\mu_0}{2\pi}$

24. If only 2% of the current is to pass through a galvanometer of resistance G, then resistance of shunt will be **[1]**

a) 50G b) 49G

c) $\frac{G}{50}$ d) $\frac{G}{49}$

25. If electron velocity is $2\hat{i} + 3\hat{j}$ and it is subjected to magnetic field of $4\hat{k}$, then its **[1]**

a) none of these b) speed will change

c) both path will change and speed will change d) path will change

26. The SI unit of magnetic pole strength is **[1]**

a) ampere metre^2 b) ampere metre^{-2}

c) ampere per metre d) ampere metre

27. A wire of length L is bent to form a ring of single loop and current is flown through it. The magnetic field at its centre is B. If the same wire is bent to form two loops and same current is flowing, the new B' at its centre will be **[1]**

a) B b) $\frac{B}{2}$

c) 4B d) 2B

28. A wire is perpendicular to the plane of the paper. A ring of compass needles surrounds the wire in the plane of the paper with center of ring being the center of the wire. Initially there is no current in the wire. What happens after a steady dc current is established in the wire? **[1]**

a) The needles become parallel to each other b) Some needles become parallel to each other while others are uneffected

c) Nothing happens d) The needles become tangential to the ring

29. A long wire carries a steady current. It is bent into a circle of one turn and the magnetic field at the centre of the coil is B. It is then bent into a circular loop of n turns. The magnetic field at the centre of the coil will be **[1]**

a) nB b) $2\mathrm{n}^2\mathrm{B}$

c) $3\mathrm{n}^2\mathrm{B}$ d) n^2B

30. An electron having energy 10 eV is circulating in path of radius 0.105 m having magnetic field of 10^{-4}T. The speed of the electron will be: **[1]**

a) $1.9 \times 10^6 m/s$ b) $3.8 \times 10^{12} m/s$

c) $1.9 \times 10^{12} m/s$ d) $3.8 \times 10^6 m/s$

31. Two infinitely long wires carry currents in opposite directions. Then the field at a point P lying midway between them is **[1]**

a) twice the field due to each wire alone

b) square of the field due to each wire alone

c) zero

d) half of the field due to each wire alone

32. The ratio of magnetic induction on the axis of a straight long current carrying solenoid at a point on end to that at the centre of solenoid is **[1]**

a) 1 : 1 b) $\sqrt{2}$: 1

c) 2 : 1 d) 1 : 2

33. A particle having charge 100 times that of an electron is revolving in a circular path by radius 0.8 m with one rotation per second. The magnetic field produced at the centre is: **[1]**

a) $10^{-16}\mu_0$ b) $10^{17}\mu_0$

c) $10^{-15}\mu_0$ d) $10^{-17}\mu_0$

34. A voltmeter has range V. What resistance should be connected in series with it to increase its range to nV? Initial resistance is R_0. **[1]**

a) $\frac{R_0}{n}$ b) (n - 1)R_0

c) nR_0 d) (n + 1)R_0

35. A galvanometer having 30 divisions has a current sensitivity of 20 μA/div. It has a resistance of 25 ohm. How will you convert it into an ammeter measuring upto 1 ampere. Find the shunt to be used. **[1]**

a) 0.30 Ω b) 0.15 Ω

c) 0.015 Ω d) 0.030 Ω

36. A wire of given length is first bent in one loop and the next time it is bent in three loops. If the same current is passed in both the cases, the ratio of the magnetic field induction at their centres will be **[1]**

a) 1:9 b) 9:1

c) 1:3 d) 1:4

37. If number of turns, area and current through a coil is given by n, A and i respectively, then its magnetic moment will be **[1]**

a) n^2iA b) ni A

c) niA^2 d) ni$\sqrt{A}$

38. The magnetic field in a circular loop of diameter 0.1 m carrying a current of 1 A is **[1]**

a) $3.8 \times 10^{-5} T$ b) $4.4 \times 10^{-5} T$

c) $1.25 \times 10^{-5} T$

d) $2.8 \times 10^{-5} T$

39. Protons move parallel to each other with equal speeds 3×10^5 ms^{-1}. The ratio of magnetic and electric force between them is **[1]**

a) 10^{-6}

b) 1

c) 10^{-3}

d) 10^{-9}

40. An electron is shot into a liquid placed in a uniform magnetic field, in a plane perpendicular to magnetic field, then **[1]**

a) trajectory is an inward winding spiral

b) its revolution frequency decreases

c) the kinetic energy of electron remains same

d) the trajectory of electron is circular

ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

MCQ Examination September (2020-2021)

CLASS 12 - CHEMISTRY

Chemistry

Time Allowed: 40 minutes **Maximum Marks: 40**

1. A gaseous substance dissolves in the water giving a pale blue solution which decolorizes $KMnO_4$ and oxidizes KI to I_2: **[1]**

   a) HNO_3 b) H_2O_5

   c) N_2O_3 d) NH_3

2. Bond dissociation enthalpy of E—H (E = element) bonds is given below. Which of the compounds will act as strongest reducing agent? **[1]**

Compound	NH_3	PH_3	AsH_3	SbH_3
Δ_{diss} (E—H)/kJ mol^{-1}	389	322	297	255

   a) NH_3 b) SbH_3

   c) PH_3 d) AsH_3

3. Affinity for hydrogen decreases in the group from fluorine to iodine. Which of the halogen acids should have highest bond dissociation enthalpy? **[1]**

   a) HI b) HCl

   c) HBr d) HF

4. On heating ammonium dichromate and barium azide separately we get **[1]**

   a) N_2O with ammonium dichromate and N_2 with barium azide

   b) N_2O with ammonium dichromate and NO_2 with barium azide

   c) N_2 with ammonium dichromate and NO with barium azide

   d) N_2 in both cases

5. A black compound of manganese reacts with a halogen acid to give greenish yellow gas. When excess of this gas reacts with NH_3 an unstable trihalide is formed. In this process the oxidation state of nitrogen changes from _____. **[1]**

   a) -3 to 0 b) - 3 to +5

   c) – 3 to +3 d) 0 to -3

6. Which of the following statements is wrong? **[1]**

   a) Covalency of nitrogen in N_2O_5 is four.

   b) NO_2 is paramagnetic in nature.

   c)

   d) Single N–N bond is stronger than the

PH_3 can act as a ligand in the formation of coordination compound with transition elements.

single P–P bond.

7. How many moles of oxygen are obtained by heating 8 mol of potassium chlorate? **[1]**

a) 28

b) 8

c) 16

d) 12

8. In the preparation of compounds of Xe, Bartlett had taken $O_2^+PtF_6^-$ as a base compound. This is because **[1]**

a) both O_2 and Xe have almost same ionisation enthalpy.

b) both O_2 and Xe have the same size.

c) both O_2 and Xe have the same electron gain enthalpy.

d) both Xe and O_2 are gases.

9. On addition of conc. H_2SO_4 to a chloride salt, colourless fumes are evolved but in case of iodide salt, violet fumes come out. This is because: **[1]**

a) HI is of violet colour

b) HI gets oxidized to I_2

c) H_2SO_4 reduces HI to I_2

d) HI changes to HIO_3

10. Which of the following elements does not show allotropy? **[1]**

a) Arsenic

b) Antimony

c) Nitrogen

d) Bismuth

11. Which of the following is thermally the most stable? **[1]**

a) H_2O

b) H_2Se

c) H_2S

d) H_2Te

12. Pure N_2 is prepared in the laboratory by heating a mixture of: **[1]**

a) NH_4Cl and NaOH

b) NH_4OH and NaCl

c) NH_4Cl and $NaNO_3$

d) NH_4Cl and $NaNO_2$

13. Ozone can be detected by using **[1]**

a) Sodium

b) Sulphur

c) Silver

d) Mercury

14. Hot conc. H_2SO_4 acts as a moderately strong oxidising agent. It oxidises both metals and nonmetals. Which of the following element is oxidised by conc. H_2SO_4 into two gaseous products? **[1]**

a) C

b) Zn

c) S

d) Cu

15. Which of the following is isoelectronic pair? **[1]**

a) BrO_2^-, BrF_2^+

b) ClO_2, BrF

c) ICl_2, ClO_2

d) CN^-, O_3

16. On heating with concentrated NaOH solution in an inert atmosphere of CO_2, white phosphorus gives a gas. Which of the following statement is incorrect about the gas? **[1]**

a) It is more basic than NH_3.

b) It is highly poisonous and has smell like rotten fish.

c) Its solution in water decomposes in the presence of light.

d) It is less basic than NH_3.

17. N_2O_3 is: **[1]**

a) A basic oxide and the anhydride of HNO_2.

b) An acidic oxide and anhydride of HNO_2.

c) A neutral oxide and the anhydride of HNO_3.

d) An acidic oxide and the anhydride of $H_2N_2O_2$.

18. Xenon difluoride has _____ shape. **[1]**

a) Linear

b) Trigonal

c) Angular

d) Pyramidal

19. Of the following hydrides which is the strongest reducing agent? **[1]**

a) PH_3

b) AsH_3

c) BiH_3

d) NH_3

20. Which of the following oxides reacts with both HCl and NaOH? **[1]**

a) ZnO

b) N_2O_5

c) CO_2

d) CaO

21. **Assertion:** Xenon forms fluorides. **[1]**
Reason: Because 5d-orbitals are available for valence shell expansion.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

22. **Assertion:** Ozone is a powerful oxidising agent in comparison to O_2. **[1]**

Reason: Ozone is diamagnetic but O_2 is paramagnetic.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE

CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

23. **Assertion:** F_2 has low reactivity. **[1]**

Reason: F-F bond has low bond dissociation enthalpy.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

24. **Assertion:** Iodine dissolves in aqueous solution of potassium iodide. **[1]**

Reason: Potassium iodide behaves as an organic solvent and therefore, dissolves non-polar iodine.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

25. **Assertion:** F - F bond in the F_2 molecule is strong. **[1]**

Reason: F atom is small in size.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

26. Electronic configuration of Fe^{3+} is: **[1]**

a) [Ar] $4s^2 3d^3$

b) [Ar] $3d^5$

c) [Ar] $4s^2 3d^6$

d) [Ar] $4s^2 3d^4$

27. Which of the following is paramagnetic as well as coloured ion? **[1]**

a) Ti^{4++}

b) Cu^{+}

c) Sc^{3+}

d) Cu^{2+}

28. The yellow colour of the chromate changes to orange on acidification due to the formation of: **[1]**

a) $Cr_2O_7^{2-}$

b) Cr_2O_3

c) CrO_2 d) CrO_4^{2-}

29. Ni^{2+} in traces can be tested using **[1]**

a) Dimethylglyoxime b) Potassium ferrocyanide

c) Ammonium sulphocyanide d) Sodium nitroprusside

30. A reduction in the atomic size with an increase in atomic number is characteristic of the elements of: **[1]**

a) radioactive series b) d–block

c) f-block d) high atomic masses

31. The magnetic nature of elements depends on the presence of unpaired electrons. Identify the configuration of transition element, which shows highest magnetic moment. **[1]**

a) $3d^2$ b) $3d^5$

c) $3d^7$ d) $3d^8$

32. Haemoglobin and chlorophyll contain: **[1]**

a) Fe and Mg b) Fe and Mn

c) Fe and Co d) Mg and Fe

33. Interstitial compounds are formed when small atoms are trapped inside the crystal lattice of metals. Which of the following is not the characteristic property of interstitial compounds? **[1]**

a) They retain metallic conductivity. b) They have high melting points in comparison to pure metals.

c) They are chemically very reactive. d) They are very hard.

34. A blue solution of copper sulphate becomes darken when treated with the excess of ammonia. This is because: **[1]**

a) Ammonia is a stronger ligand than water. b) All of these

c) Ammonia molecules replace water molecules in the solution. d) Ammonia forms a stable complex ion $[Cu(NH_3)_4]^{2+}$ with Cu^{2+} ions.

35. The most stable ion is **[1]**

a) Fe^{2+} b) Mn^{2+}

c) Cr^{2+} d) All are equally stable

36. Generally transition elements form coloured salts due to the presence of unpaired electrons. Which of the following compounds will be coloured in solid state? **[1]**

a) Cu_2Cl_2 b) Ag_2SO_4

c) CuF_2 d) ZnF_2

37. **Assertion:** Ionisation of transition metals involve loss of ns electrons before (n – 1) d electrons. **[1]**

Reason: Filling of ns orbitals take place before the filling of (n – 1)d orbitals.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason areCORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT

d) Assertion is INCORRECT but, reason is CORRECT

38. **Assertion:** Tungsten has very high melting point. **[1]**
Reason: Tungsten is a covalent compound.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

39. **Assertion:** $TiCl_4$ is colourless compounds. **[1]**
Reason: Ti^{4+} has no unpaired electron.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason areCORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT

d) Assertion is INCORRECT but, reason is CORRECT

40. **Assertion:** There is a continuous decrease in size among lanthanoids. **[1]**
Reason: Lanthanoids show lanthanoid contraction.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

MCQ Examination September (2020-2021)

CLASS 12 - BIOLOGY

Biology

Time Allowed: 40 minutes **Maximum Marks: 40**

1. The correct sequence of gene expression is: **[1]**

   A. Formation of the primary transcript
   B. Regulation of splicing
   C. Transport of mRNA from the nucleus to the cytoplasm
   D. Translation

   a) C > D > A > B
   b) A > B > C > D
   c) B > C > A > D
   d) D > C > B > A

2. The net electric charge on DNA and histones is: **[1]**

   a) zero
   b) both negative
   c) both positive
   d) negative and positive, respectively

3. Gel electrophoresis is used for _____. **[1]**

   a) Isolation of DNA molecule
   b) Cutting of DNA into fragments
   c) Separation of DNA fragments according to their size
   d) Construction of recombinant DNA by joining with cloning vectors

4. Single nucleotide polymorphism (SNPs) revolutionize the process of finding chromosomal locations for: **[1]**

   a) Treatment of sex-linked genes
   b) Hybridization
   c) Disease-associated sequences and tracing human history
   d) Fingerprinting

5. Which of the following are the functions of RNA? **[1]**

   a) All of these
   b) It carries amino acids to ribosomes.
   c) It is a constituent component of ribosomes.
   d) It is a carrier of genetic information from DNA to ribosomes synthesising polypeptides.

6. For DNA fingerprinting, the DNA is obtained from: **[1]**

   a) WBCs, hair root cells, and body secretion
   b) Hair root cells only
   c) White blood corpuscles only
   d) Body secretion only

7. In biochemical genetics the term gene is being replaced by **[1]**

   a) Anticodon
   b) Genome

c) Template
d) Cistron

8. Both deoxyribose and ribose belong to a class of sugars called: **[1]**

a) polysaccharides
b) pentoses
c) trioses
d) hexoses

9. Satellite DNA is useful tool in **[1]**

a) Genetic engineering
b) Forensic science
c) Organ transplantation
d) Sex determination

10. Removal of RNA polymerase III from nucleoplasm will affect the synthesis of: **[1]**

a) t-RNA
b) m-RNA
c) r-RNA
d) hn-RNA

11. Which of the following statements is correct about the role of regulatory proteins in transcription in prokaryotes? **[1]**

a) They can act both as activators and as repressors.
b) They only increase expression.
c) They only decrease expression.
d) They interact with RNA polymerase but do not affect the expression.

12. To initiate translation, the mRNA first binds to: **[1]**

a) The smaller ribosomal sub-unit
b) The larger ribosomal sub-unit
c) No such specificity exists
d) The whole ribosome

13. Human genome project can leads to revolutionary new ways to: **[1]**

a) Study the mechanism of disease development.
b) Diagnose, treat, and prevents thousands of disorder that affect human beings.
c) Study HIV disease development.
d) Developing genome project of other animals.

14. If the sequence of nitrogen bases of the coding strand of DNA in a transcription unit is 5' - A T G A A T G - 3', the sequence of bases in its RNA transcript would be: **[1]**

a) 5' - C A U U C A U - 3'
b) 5' - G U A A G U A - 3'
c) 5' - A U G A A U G - 3'
d) 5' - U A C U U A C - 3'

15. Select the two correct statements out of the four (A–D) given below about lac operon. **[1]**

A. Glucose or galactose may bind with the repressor and inactivate it.
B. In the absence of lactose, the repressor binds with the operator region.
C. The z-gene codes for permease.
D. This was elucidated by Francois Jacob and Jacque Mono.

The correct statements are:

a) B and D
b) A and B
c) A and C
d) B and C

16. With regard to mature mRNA in eukaryotes: **[1]**

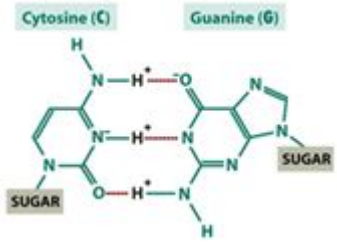
a) exons and introns do not appear in the mature RNA.

b) exons appear but introns do not appear in the mature RNA.

c) both exons and introns appear in the mature RNA.

d) introns appear but exons do not appear in the mature RNA.

17. H-bonds between Cytosine and Guanine are **[1]**



a) 1

b) 2

c) 3

d) 4

18. Process used for amplification or multiplication of DNA for finger printing is **[1]**

a) Sesslerisation

b) Southern blotting

c) Polymerase chain reaction

d) Northern blotting

19. The human chromosome with the highest and least number of genes in them are respectively: **[1]**

a) Chromosome 21 and Y

b) Chromosome 1 and Y

c) Chromosome X and Y

d) Chromosome 1 and X

20. The technique of DNA fingerprinting was initially developed by **[1]**

a) S. Mond

b) Alec Jefferys

c) Robert Sanford

d) D.Pollard

21. The promoter site and the terminator site for transcription are located at: **[1]**

a) 3' (downstream) end and 5' (upstream) end, respectively of the transcription unit

b) 5' (upstream) end and 3' (downstream) end, respectively of the transcription unit

c) the 5' (upstream) end

d) the 3' (downstream) end

22. In lac operon, lactose is the substrate for enzyme beta-galactocidase and its regulates: **[1]**

a) Only switching of OFF of the operon

b) Switching ON and OFF of the operon

c) Neither switching ON or OFF of operon

d) Only switching ON of the operon

23. In human beings 99.9% of genome sequence are same in all individuals only 0.1% of genome differ that: **[1]**

a) make every individual similar in phenotypic appearance.

b) make every individual genetically similar.

c) make every individual unique in phenotypic appearance.

d) make a genetic variation for evolution.

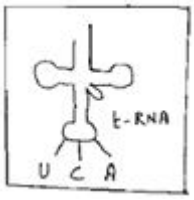
24. The fact that a purine base always pairs through hydrogen bonds with a pyrimidine base in the DNA double helix leads to: **[1]**

a) the semiconservative nature
b) uniform length in all DNA
c) the antiparallel nature
d) uniform width throughout DNA

25. Removal of introns and joining of exons in a defined order during transcription is called **[1]**

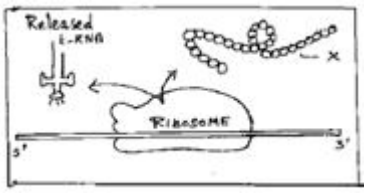
a) Splicing
b) Inducing
c) Looping
d) Slicing

26. Write and the codon for anticodon on the t-RNA **[1]**



a) AGU
b) UGU
c) UGA
d) ACU

27. What does X represent in the following diagram: **[1]**



a) Released tertiary protein
b) Released polypeptide chain
c) Released secondary protein
d) Released 3D protein molecule

28. Typically DNA content of about 100000 cells or 1 microgram is required for DNA fingerprinting. If the sample obtained is less it is increased by: **[1]**

a) Transcription of DNA in cells
b) Elimination of DNA in cells
c) Translation of DNA in cells
d) Polymerase chain reaction (PCR) by amplification process

29. A nucleoside differs from a nucleotide. It lacks the: **[1]**

a) hydroxyl group
b) base
c) sugar
d) phosphate group

30. Human genome project was 13 year project co-ordinated by **[1]**

a) Bhabha atomic research centre, India
b) U.S.Department of energy only
c) U.S.Department of energy and National institute of health
d) Welcome Trust (U.K)

31. **Assertion:** Regulation of lac operon by a repressor is referred to as negative regulation. **[1]**
Reason: Lac operon is under the control of positive regulation as well.

a) Both assertion and reason are
b) Assertion is correct but reason is

correct

incorrect

c) Both assertion and reason are incorrect

d) Assertion is incorrect but reason is correct

32. **Assertion**: Genetic map up of an organism or individual lies in the DNA sequence. **[1]**
Reason: If two individual differs, then their DNA sequence should also be different.

a) Both assertion and reason are correct

b) Assertion is correct but reason is incorrect

c) Assertion is incorrect but reason is correct

d) Both assertion and reason are incorrect

33. State true or false: **[1]**
AUG codes for methionine (Met) and act as a start Codon.

34. State true or false: **[1]**
DNA being stable mutates at a slower rate.

35. Fill in the blanks: **[1]**
A typical nucleosome contains _____ base pairs of DNA helix.

36. Fill in the blanks: **[1]**
Cytosine, Uracil, and Thymine are _____.

37. Fill in the blanks: **[1]**
A+T = G+C given by _____.

38. Fill in the blanks: **[1]**
Chromatin that stains dark and more densely packed are called _____.

39. Fill in the blanks: **[1]**
Adenine and Guanine are _____.

40. Fill in the blanks: **[1]**
A nitrogenous base linked to the pentose sugar through _____ linkages.

ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

MCQ Examination September (2020-2021)

CLASS 12 - COMPUTER SCIENCE

Computer Science

Time Allowed: 40 minutes **Maximum Marks: 40**

1. **Full form of NSF Net is** **[1]**

   a) National Software Foundation Network

   b) National Science Foundation Network

   c) NetworkSocietal Framework Network

   d) Network Software Foundation Network

2. **Which one of the following is not an application example of Networking:** **[1]**

   a) Taking print of a file using pen drive

   b) Saving admission application online

   c) Transferring software installation in a system from another system

   d) Copying of a file from remote system

3. **Which one of the following is an application example of WAN:** **[1]**

   a) A passenger book flight ticket thru airline site

   b) A network of 2 computers in a City

   c) A manager sanctions request sent thru clerks in a bank.

   d) A network of 2 computersin a lab

4. **Information will sent over internet by splitting it into smaller groups and transmitting them individually, is a _____method:** **[1]**

   a) Circuit Switching Method

   b) All of these

   c) Packet Switching Method

   d) Message Switching Method

5. **Bandwidth can be measured in__unit** **[1]**

   a) All of these

   b) KHz

   c) MHz

   d) GHz

6. **Which one is most suitable networking cable in high electrical/electronic environment:** **[1]**

   a) Fiber

   b) Coaxial

   c) Twisted Pair

   d) Shielded Twisted Pair

7. **Networking cables will connect/inserted into computer system in which interface:** **[1]**

a) RJ45 b) Ethernet Card

c) Motherboard d) Modem

8. **High data attenuation will occur in** **[1]**

a) LAN b) PAN

c) MAN d) WAN

9. **High data transfer speed will be in** **[1]**

a) PAN b) WAN

c) MAN d) LAN

10. **If distance between two computers are more than cable capacity, which of the following device will be used:** **[1]**

a) Modem b) Router

c) Bridge d) Repeater

11. **To connect two or more systems in a network, which of the following device will be used:** **[1]**

a) Modem b) Repeater

c) None of these d) Switch

12. **To connect a PC system in wireless network, which of the following device should be in system:** **[1]**

a) Ethernet Card b) Wifi Card

c) Sim Card d) NIC

13. **Which of the following topology used short cable length** **[1]**

a) Ring b) Tree

c) Mesh d) Star

14. **Fiber optics posses following properties** **[1]**

a) All of the mentioned b) Immune electromagnetic interference

c) Very less signal attenuation d) Very hard to tap

15. **Physical or logical arrangement of network is** **[1]**

a) None of the mentioned b) Topology

c) Networking d) Routing

16. **Protocols are?** **[1]**

a) Logical communication channels for transferring data

b) Physical communication channels sued for transferring data

c) Agreements on how communication components and DTE's are to communicate

d) None of above

17. **Data communication system spanning states, countries, or the whole world is** **[1]**

a) LAN

b) PAN

c) MAN

d) WAN

18. **What is internet?** **[1]**

a) none of the mentioned

b) a vast collection of different networks

c) interconnection of local area networks

d) a single network

19. **If two of your mobile are connected in thru Bluetooth, it is an example of:** **[1]**

a) WAN

b) MAN

c) PAN

d) LAN

20. **Which of this is not a guided media?** **[1]**

a) Wireless LAN

b) Copper wire

c) Coaxial cable

d) Fiber optical cable

21. **Which protocol is used to browse web site contents on a client system?** **[1]**

a) HTTP

b) PPP

c) TELNET

d) OSI

22. **DNS is the abbreviation of** **[1]**

a) Dynamic Name System

b) Domain Network Service

c) Domain Name System

d) Dynamic Network System

23. **Network congestion occurs** **[1]**

a) When connection between two

b) When a system terminates

nodes terminates

c) A case of traffic overloading

d) None of the mentioned

24. **What is the meaning of Bandwidth in Network?** **[1]**

a) Connected Computers in the Network

b) None of Above

c) Class of IP used in Network

d) Transmission capacity of a communication channels

25. **What is a Firewall in Computer Network?** **[1]**

a) An operating System of Computer Network

b) A web browsing Software

c) A system designed to prevent unauthorized access

d) The physical boundary of Network

26. **A web cookie is a small piece of data** **[1]**

a) none of the mentioned

b) sent from root server to all servers

c) sent from a website and stored in user's web browser while a user is browsing a website

d) sent from user and stored in the server while a user is browsing a website

27. **URL stands for** **[1]**

a) unique resource locator

b) uniform reference label

c) uniform resource locator

d) unique reference label

28. **Dynamic web page** **[1]**

a) generates on demand by a program or a request from browser

b) both (a) and (b)

c) none of the mentioned

d) is same every time whenever it displays

29. **What is a web browser?** **[1]**

a) all of the mentioned

b) it enables user to access the resources of internet

c) a program that can display a web page

d) a program used to view html documents

30. **FTP, a protocols to** **[1]**

a) Transfer the content from webserver

b) Transfer files from client to server

to client on request of url

c) Transfer the server content to client thru browser

without third party intervene

d) Transfer the content of client computer to server in unidirectional way

31. **Exynosrelated to** **[1]**

a) IBM

b) Media tek

c) Samsung

d) Snapdragon

32. **Differencebetween http and https is** **[1]**

a) TLS

b) SSS

c) SSL

d) NONE

33. **To receive emails which protocol works** **[1]**

a) BOTH

b) POP

c) WMA

d) SMTP

34. **Which hosting service provides high security and control over site:** **[1]**

a) Dedicated Hosting

b) Cloud Hosting

c) VPS Hosting

d) Shared Hosting

35. **.org domain suffix means** **[1]**

a) Original

b) none

c) Organization

d) On register of government

36. **Which one is having tags/commands on user's needs** **[1]**

a) VB

b) XML

c) HTML

d) JAVA

37. **Content reserved/protected thru IPR** **[1]**

a) Copyright

b) Patent

c) Trademark

d) All

38. **Which Virus not requires any carrier** **[1]**

a) Trojan Horse

b) Spyware

c) Malware

d) Worm

39. **Which one is not a virus** **[1]**

a) WORM

b) MALWARE

c) SPYWARE

d) COOKIES

40. **Which one of the following is not a requirement to connect in a Network:** **[1]**

a) RJ-45

b) Network Interface Card

c) Cables

d) Graphic card

ATOMIC ENERGY CENTRAL SCHOOL NO.4 Rawatbhata

MCQ Examination September (2020-2021)

CLASS 12 - PHYSICAL EDUCATION

Online Multiple Choice Question September-2020

Time Allowed: 40 minutes **Maximum Marks: 40**

General Instructions:

All questions are compulsory.

1. Cognitive Disability is **[1]**

   a) Impairment of Brain b) Argumentative Behaviour

   c) Cannot do Physical work d) Limb not working

2. Which of the following is not a Disability Etiquettes? **[1]**

   a) Talk diectly b) Donnot lean on Chair

   c) Helping without giving Identity d) offer to help

3. The need of Special Children is **[1]**

   a) All the above b) Activity according to the need

   c) Motivate to Participate d) Simple and Easy rule

4. ODD patient do not show sign of **[1]**

   a) Calmness b) Irritation

   c) Vindictiveness d) Anger

5. Cognitive Behavior therapy is used in **[1]**

   a) ASD b) ODD

   c) OCD d) ADHD

6. Which of the following is not a factor affecting Motor Development in Children? **[1]**

   a) Parent & Heredity b) Regular exercise

   c) Nutritious Food d) Peer Group

7. Which of the following activity is good for development in Early Childhood Children? **[1]**

   a) Fun Games b) FootBall

   c) VolleyBall d) Athletics

8. Later Childhood stage is between. **[1]**

   a) 7-12 yrs. b) 1-2 yrs.

   c) 13-19 yrs. d) 2-6 yrs.

9. Main Cause of Kyphosis is- **[1]**

   a) Wrong sleeping posture b) Wrong footwear

c) Wrong sitting posture
d) Wrong walking style

10. Any kind of impairment or permanent reduction in the physical or mental capacity is called _____. **[1]**

a) Disease
b) Disorder
c) Discomfort
d) Disability

11. Which of the following is NOT part of strategies to make physical activities accessible to Children with special needs? **[1]**

a) Assistive technology
b) Creating special classrooms
c) Inclusive classrooms
d) Professional courses

12. Child is not able to adjust within society is suffering from **[1]**

a) ASD
b) ADHD
c) ODD
d) OCD

13. Which of the following is NOT a disorder? **[1]**

a) Having only one leg
b) Hyper activity
c) Too much sensitivity to cleanliness
d) Overeating

14. Children suffering from dyslexia and speech disorders are said to have _____. **[1]**

a) Physical disability
b) Intellectual disability
c) Permanent disability
d) Cognitive disability

15. The common symptoms of this disorder are hyperactivity, trouble focusing on a task, very short span of attention and missing details. It is _____. **[1]**

a) ASD
b) SPD
c) ADHD
d) OCD

16. Expended from of ADHD **[1]**

a) Automatic disability high defect
b) Automatic deficit hyper discorder
c) Attention deficit hyperactivity disorder
d) Attention disorder of hypoactive defict

17. The symptoms of _____ are difficulty in communication and interaction with people. **[1]**

a) ASD
b) ODD
c) ADHD
d) OCD

18. SPD's expended form is **[1]**

a) Sensory processing Disorder
b) Sensory processing department
c) Special poilce department
d) Special processing Disorder

19. Repeated Action are called **[1]**

a) ADHD
b) ASD
c) OCD
d) ODD

20. Expended form of ODD is **[1]**

a) Opposite different disorder
b) Obessive defect disability
c) Oppositional defiant disorder
d) Opposite different disability

21. The symptoms of _____ are people doing repetitive behaviours, performing routine tasks over and again or having certain thoughts repeatedly. **[1]**

a) ODD
b) ASD
c) ADHD
d) OCD

22. In this deformity, there is no arch in the foot and the foot is completely flat. It is _____. **[1]**

a) Short foot
b) Plain foot
c) Normal foot
d) Flat foot

23. Which development is motor development **[1]**

a) Sense Organs
b) Postural deformity
c) Disorder development
d) Bones & muscles

24. Abnormal Curve of spine at front is called **[1]**

a) Lordosis
b) Scoliosis
c) KnockKnees
d) Kyphosis

25. Which of the following is NOT part of four stages of motor development in children? **[1]**

a) Later childhood
b) Infanthood
c) Adulthood
d) Early childhood

26. _____ is a postural deformity in which both the knees touch of overlap each other in normal standing position. **[1]**

a) Shock Knee
b) Lock Knee
c) Weak Knee
d) Knock Knee

27. _____ uses the larger muscles of the skeleton or group of larger muscles too maintain posture and balance. **[1]**

a) Healthy motor development
b) Strong motor development
c) Fine motor development
d) Gross motor development

28. Measurement of a Test is **[1]**

a) Instrument to collect Data
b) Scientific Score
c) Subjective test
d) Questionare

29. _____ uses the smaller muscles of the hand, feet and face for more precise activities. **[1]**

a) Fine motor development
b) Gross motor development
c) Strong motor development
d) Healthy motor development

30. This test helps to measure the number of different muscle groups with regard to their strength and flexibility. It is _____. **[1]**

a) AAHPER
b) Krous-Weber Test
c) Back scratch test
d) Chair stand test

31. _____ is a part of the senior fitness test protocol and is designed to test the functional fitness of seniors. **[1]**

a) Harvard Step Test
b) Six Minute Walk Test
c) One hour Walk Test
d) 50 Meter Walk Test

32. Rikli and Jones senior citizen test was developed in **[1]**

a) 2000
b) 2002
c) 2001
d) 1990

33. The formula to measure BMI (Body Mass Index) is **[1]**

a) Weight + Height
b) Weight × Height
c) Weight/Height
d) Height/Weight

34. Athlete speed (Acceleration) is measured **[1]**

a) Sit and Reach
b) 4 $\times$10 m shuttle Run
c) 50 m standing start
d) Modified push-ups (Girls)

35. Which of the following is NOT part of General Motor Fitness test? **[1]**

a) 50 Yard Dash
b) Push-ups
c) Shuttle Run
d) Kraus Weber Test

36. Measurment of the field of Six minute walk test **[1]**

a) 20 $\times$ 5 yards
b) 15 $\times$ 10 yards
c) 16 $\times$ 18 yards
d) 16 $\times$ 12 yards

37. Weight of the dumbbell for men in Arm curl up test **[1]**

a) 10 lbs
b) 8 lbs
c) 5 lbs
d) 6 lbs

38. _____ is used to test cardiovascular fitness. **[1]**

a) AAHPER
b) Shuttle Run Test
c) Rockport Test
d) Kraus Weber Test

39. Which of the following is assessed by eight-foot up and go test? **[1]**

a) Walking speed, Coordination and agility
b) Physiology fitness
c) Upper body strength
d) Lower body flexibility

40. Back Scratch test is to check the **[1]**

a) Shoulder Flexibility
b) Shoulder Pain
c) Shoulder Joint
d) Shoulder Strength

Solution

Class 12 - English Core

English

1. **(b)** Because he was regarded as a lowly being
   Explanation: The peddler was generally met with sour faces and most of the time was not welcomed by people at all because he was considered as a lowly being dressed in rags.
2. **(b)** She is a generous and kind-hearted person
   Explanation: Going through the prose, one could observe the innate generosity and kindness that has been expressed by the character sketch of Edla Willmansson.
3. **(a)** A game of cards named mjölis
   Explanation: The old man was very happy to have company. The cottage was occupied only by him, so, he was delighted to have someone to talk to, share his food with and pass some time without being lonely. Hence, in a lively spirit, the host and the guest played a game of card named mjölis after dinner till bedtime.
4. **(a)** Edla
   Explanation: Edla made this statement because she wanted peddler to stay with them for Christmas.
5. **(a)** She felt it would be rude to send away a person who was invited
   Explanation: Edla told her father that it would be unworthy of them to send away a person whom they themselves have invited over for Christmas. She said that she wanted him to have a day where he could be at peace, without any fear of getting arrested or punished, to enjoy just one day in the whole year with them, so, she convinced her father to let the peddler stay with them for Christmas.
6. **(b)** Because he was unable to do day labour being aged
   Explanation: The old man told his guest that in his days of prosperity he used to work as a crofter at the Ramsjö Ironworks but had resigned from work since he was unable to do day labour due to his age.
7. **(a)** He wished to behave as a true captain
   Explanation: The peddler wasn't used to the respect he had received from the ironmaster's family and especially from his daughter. He didn't want her to think low of him and wished to behave like a true captain as he had been referred to, believing that he should never be a cause for her embarrassment. Hence, he referred to himself as a captain by doing what a captain should have done.
8. **(a)** The old man was happy to get a companion
   Explanation: The peddler knocked at the door of a little grey cottage and asked for a night's shelter to sleep. He was not refused and was welcomed at the cottage warmly by the owner who was an old man. The man lived alone in the cottage and so was happy to get a companion, someone to talk to in his loneliness.
9. **(c)** Selma Lagerlöf
   Explanation: The text has been written by a Swedish writer, Selma Lagerlöf. Her stories have been translated into many languages.
10. **(b)** Thirty kronor
    Explanation: The old man was a crofter at the Ramsjö Ironworks but was no longer able to do day labour. Hence, his only source of living was his cow which used to provide milk for the creamery, and the peddler was informed that the old man had received thirty kronor as his payment for the same in the previous month.
11. **(b)** Because he wanted to help his old friend
    Explanation: The ironmaster had mistaken the peddler to be an old acquaintance. Observing the state where the peddler was, the ironmaster was determined to take him to his place in order to help him recover. The ironmaster wanted to cherish old memories with him on the festive occasion.
12. **(d)** Because the world had never been kind to him
    Explanation: The world had never been very kind to him and so it gave him an unwanted joy to think ill of the world.

13. **(c)** He lived alone there.
Explanation: The old man lived alone without his wife or children in his cottage.

14. **(c)** The peddler's struggle to stay alive
Explanation: The phrase has been used by the author to portray the peddler's struggle to stay alive in a world where he was not welcomed by people.

15. **(c)** Shakespeare
Explanation: Shakespeare was described as wicked by the poet for he always depicted a glorious world full of fantasies and riches which was in sharp contrast with the ground reality of the slum children. This word of Shakespeare could lure the young poverty-stricken children towards crime.

16. **(b)** social injustice and class inequality.
Explanation: In this poem Stephen Spender deals with the theme of social injustice and class inequalities. He presents the theme by talking of two different and incompatible worlds. The world of the rich and the 'civilized' has nothing to do with the world of narrow lanes and cramped holes. The gap between these two worlds highlights social disparities and class inequalities.

17. **(d)** All of these
Explanation: The poet has captured the dismal state of the slum children. He has portrayed them as exhausted and unambitious souls who were weighed down by their legacy of poverty. They were physically and mentally bogged down by the social atrocities.

18. **(b)** All of these
Explanation: The poet reflected the crucial role that can be played by the affluent class in bringing a change in the gloomy world of the slum children. All these people can break the social barriers and help in the upliftment and betterment of the shackled world of the children.

19. **(c)** metaphor
Explanation: Metaphor is a comparison between two objects with the intent of giving clearer meaning to one of them. Those who create history are people whose ideas and language can motivate, move, inspire and influence millions of people. In order to be effective, their language must have the warmth and power of the Sun.

20. **(c)** All of these
Explanation: The poet craftily focused on the dismal state of life of the slum children. He urged to break all the barriers in their path of growth and success by providing them with equal opportunities and good education. It is our moral responsibility to liberate these children.

21. **(a)** he wants the authorities to look after their needs
Explanation: The poet wants the people in authority to realize their responsibility towards the children of the slums. All sort of social injustice and class inequalities be ended by eliminating the obstacles that confine the slum children to their ugly and filthy surroundings. Let them study and learn to express themselves freely. Then they will share the fruit of progress and prosperity and their lives will change for the better.

22. **(d)** contrast between two incompatible worlds.
Explanation: Stephen Spender conveys the message of social justice and class equalities by presenting two contrasting and incompatible worlds. He provides a way out. For achieving any significant progress and development the gap between the two worlds must be abridged. This can be done only by breaking the barriers that bind the slum children in dark, narrow, cramped holes and lanes. Let them be made mentally and physically free to lead happy lives. Only then art, culture and literature will have relevance for them.

23. **(d)** John Keats
Explanation: The poem was written by John Keats, a renowned British romantic poet. The poem is an excerpt from his poem '**Endymion: A Poetic Romance'**.

24. **(a)** Increases
Explanation: According to the poet, an instance of beauty never fades away. It has a perennial source and

makes a lasting impression on the human minds. It is eternal and has the power to heal and rejuvenate mankind.

25. **(c)** They give greenery around us and cool the environment.
Explanation: The simplest things of nature like daffodils ,bloom among the green surroundings and make it look beautiful. The rills or small streams of clear water help the atmosphere to cool during the hot summer season.They also bring respite to our eyes .

26. **(c)** All of these
Explanation: A bower refers to a pleasant and peaceful place under the shade of a tree. It provides the passersby with peace and security under its shade. It enables them to have a sound sleep and good health.

27. **(b)** nature
Explanation: The nature in the form of tree ,the sun,the moon,flowers ,rivers and everything else that brings solace and comfort to the eyes of the beholder ,can remove the pall of gloom from our lives.

28. **(a)** Musk roses
Explanation: The poet captured the beautiful musk roses that grew abundantly in the mid-forests and portrayed them as an instance of beauty which has a long-lasting imprint on the human mind. The beautiful and fragrant roses enhance the beauty of the forest and create a serene atmosphere that gives immense pleasure to the onlooker.

29. **(b)** Joy forever
Explanation: The poet craftily focused on the intransient nature of beautiful things which provide us with immense joy and pleasure without diminishing in value.

30. **(b)** To connect with the earth
Explanation: The poet highlighted that we weave a string of flowers or memories every morning, which provides us with support and motivation to live our lives to the fullest instead of burdening ourselves with pain and suffering. The flowery band binds us to our lives.

31. **(c)** Because Hana was an impeccable wife
Explanation: Hana was an impeccable wife and stood by her husband in all his decisions. She helped Dr Sadao when he was operating upon the enemy.

32. **(c)** Being a doctor, it was his duty
Explanation: Dr Sadao treated the American prisoner of war because as a doctor, he was trained to save lives. He could not have let the injured soldier die even though he was his national enemy, as that would have been against his professional ethics.

33. **(d)** Shocked and terrified
Explanation: When Dr Sadao informed his servants about the prisoner, all were shocked and terrified. The gardener remarked that his master should not save the wounded man as nature had tried to kill him twice.

34. **(b)** To study surgery and medicine
Explanation: Sadao Hoki went to America to study surgery and medicine as it was the wish of his father.

35. **(a)** The old General was in pain
Explanation: The old General was in pain and therefore, Dr Sadao was informed and called immediately to aid him.

36. **(b)** He wanted to make sure that she was Japanese first.
Explanation: He had waited to fall in love with her until he was sure that she was Japanese. He was afraid that his father would have never accepted an American as Sadao's wife.

37. **(c)** By secretly sending the American to an isolated with essential things
Explanation: The doctor decided to get rid of the American by secretly sending him to an isolated place with food, water, clothes, blanket, and a flashlight which was owned by the doctor himself.

38. **(c)** So that his own family would not be harmed by the Japanese army
Explanation: Dr Sadao told everything to the general about the man he had operated upon for the sake of his own family. So, he told everything, about the American prisoner of war, to the general so that his own

family would not be harmed by the Japanese army because that was the time of war between America and Japan.

39. **(d)** He wanted his father's permission and blessings.
Explanation: Sadao did not marry Hana heedlessly in America because he wanted his father's permission and blessings. He respected his father, who believed in culture.

40. **(c)** To bring the towels and give anesthesia to the patient
Explanation: Dr Sadao sought Hana's help while operating on the wounded white man by asking her to bring in the towels. He also told her to give anaesthesia to the patient.

Solution

Class 12 - हिंदी कोर

Hindi Core

1. **(d)** रामदास
   Explanation: रघुवीर सहाय की कविता 'रामदास' आधुनिक हिंदी कविता की महत्वपूर्ण रचनाओं में से एक है।
2. **(d)** संवेदनहीनता
   Explanation: कविता में अपाहिज को अपाहिज कहना मीडियाकर्मी की संवेदनहीनता को दर्शाता है। किसी अपाहिज को अपाहिज कहना एक क्रूर मानसिकता का परिचायक है।
3. **(a)** पीड़ा की अभिव्यक्ति
   Explanation: कविता में फूली हुई आँख दिखाकर अपाहिज की पीड़ा की अभिव्यक्ति से है। इस पीड़ा को टेलीविजन पर दिखने में मीडिया का ही अपना फायदा है।
4. **(a)** करुणा जगाना
   Explanation: कविता के अनुसार कार्यक्रम का मुख्य उद्देश्य करुणा जगाना था। लेकिन करुणा जगाने का कार्यक्रम एक क्रूर मानसिकता वाला कार्यक्रम बन गया।
5. **(a)** लोग भूल गए हैं
   Explanation: रघुवीर सहाय की कविता 'कैमरे में बंद अपाहिज' लोग भूल गये हैं काव्य संग्रह से संकलित है।
6. **(d)** दूसरा सप्तक
   Explanation: अज्ञेय द्वारा संपादित दूसरा सप्तक के कवियों में रघुवीर सहाय भी सम्मिलित थे।
7. **(b)** रोचकता बढ़ेगी
   Explanation: कविता के अनुसार कार्यक्रम की रोचकता को बढ़ाने के लिए अपाहिज को रुलाया जाता है, ताकि उनका व्यवसाय बढ़ सके।
8. **(b)** दिल्ली
   Explanation: रघुवीर सहाय की मृत्यु 30 दिसम्बर, 1990 को दिल्ली में हुई थी।
9. **(b)** संवेदनशील
   Explanation: टेलीविजन पर किसी की पीड़ा को दिखाने वाले व्यक्ति को संवेदनशील होना चाहिए। परंतु अपने कारोबार को बढ़ाने के लिए वे संवेदनहीन और क्रूर हो जाते हैं। उन्हें उस व्यक्ति को रुला कर दर्शकों को अपनी ओर आकर्षित करना होता है।
10. **(a)** साक्षात्कारकर्ता/मिडियाकर्मी
    Explanation: कविता में साक्षात्कारकर्ता के लिए हम समर्थ शक्तिमान का प्रयोग किया गया है।
11. **(a)** कहानीपन और नाटकीय वैभव
    Explanation: रघुवीर सहाय ने हिन्दी कविता को कहानीपन और नाटकीय वैभव दिया है।
12. **(c)** व्यंग्य
    Explanation: कविता के अनुसार साक्षात्कारकर्ता के मुस्कान में एक व्यंग्य छिपा हुआ है, जो उस अपाहिज व्यक्ति के प्रति होता है।
13. **(d)** प्रदर्शन की वस्तु
    Explanation: कविता के अनुसार दूरदर्शन पर अपाहिज व्यक्ति मात्र एक प्रदर्शन की वस्तु है, जिससे केवल कारोबार हो सकता है। वहाँ उसके लिए कोई सहानुभूति नहीं है।
14. **(a)** मुसकाता चाँद
    Explanation: मुक्तिबोध ने अपनी कविता में खिलते हुए चेहरे की तुलना मुसकाते चाँद से की है। कवि कहता है कि जिस प्रकार चाँद रात भर धरती पर मुसकाता है, उसी प्रकार तुम्हारा खिलता हुआ चेहरा है।
15. **(b)** नयी कविता
    Explanation: मुक्तिबोध नयी कविता आंदोलन के अगुआ कवि थे। छायावाद और स्वच्छंदतावाद के बाद नयी कविता का आगमन हुआ था।
16. **(d)** चारों ओर से घिरा हुआ
    Explanation: कविता में प्रयुक्त परिवेष्टित शब्द का अर्थ है - चारों ओर से घिरा हुआ
17. **(a)** प्रिय से विमुक्त होने का
    Explanation: 'सहर्ष स्वीकारा है' कविता में कवि मुक्तिबोध अपनी प्रिय से विमुक्त होने का दंड मांग रहा है।
18. **(d)** धुएं के बादलों में
    Explanation: 'सहर्ष स्वीकारा है' कविता में कवि ने अपने लिए दंड की मांग की है, जिसमे वह धुएं के बादल में लापता हो जाना चाहता है।
19. **(a)** खुशी खुशी स्वीकार करना
    Explanation: सहर्ष स्वीकारना का अर्थ खुशी-खुशी स्वीकार करना है।

20. **(c)** अँधेरे में
Explanation: मुक्तिबोध की सबसे लंबी कविता "अँधेरे में" है। यह कविता पहली बार 1964 में प्रकाशित हुई थी।

21. **(a)** प्रेयसी के खिले हुए चहरे को
Explanation: कवि अपने प्रेयसी के खिले हुए चेहरे को हमेशा के लिए भूलना चाहता है ताकि उसके जीवन से कुछ दुख कम हो सके।

22. **(a)** जाग्रत और अपलक
Explanation: मुक्तिबोध के अनुसार संवेदना जाग्रत और अपलक होनी चाहिए। ऐसा उन्होंने अपनी कविता 'सहर्ष स्वीकारा है' के माध्यम से कहा है।

23. **(b)** गुफाओं
Explanation: कविता में प्रयुक्त गुहाओं शब्द का अर्थ गुफाओं है। कविता में कवि पाताल के अँधेरे गुफाओं में लापता होना चाहता है।

24. **(a)** मुक्तिबोध
Explanation: 'एक साहित्यिक की डायरी' मुक्तिबोध की रचना है। ये आलोचना विधा की रचना है।

25. **(b)** स्नेह की निरंतरता
Explanation: रमणीय उजेला का अर्थ स्नेह की निरंतरता है।

26. **(a)** अमावस्या
Explanation: कविता में कवि अमावस्या के अंधकार में नहाने की बात कर रहा है । वो उस अंधकार में डूब जाना चाहता है।

27. **(c)** पटना
Explanation: फणीश्वर नाथ रेणु की मृत्यु 11 अप्रैल, 1977 को बिहार के पटना में हुई थी।

28. **(a)** राजा साहब ने लुट्टन से
Explanation: फणीश्वर नाथ रेणु की कहानी 'पहलवान की ढोलक' में यह कथन लुट्टन ने चांद सिंह को दंगल में हराने के बाद, राजा साहब ने लुट्टन से कहा था।

29. **(d)** चाँद सिंह
Explanation: मेले की कुश्ती में चाँद सिंह का पराक्रम देखते हुए श्यामनगर के महाराज ने चाँद सिंह को अपने दरबार में स्थान देने का निर्णय लिया था।

30. **(d)** मत डरना
Explanation: कहानी में उपरोक्त धुन का अर्थ मत डरना है। इस धुन का प्रयोग लुट्टन को डर से बचाने के लिए किया गया है।

31. **(a)** लुट्टन पहलवान का
Explanation: फणीश्वर नाथ रेणु की कहानी पहलवान की ढोलक में यह कथन लुट्टन पहलवान का है जो दुलहिन से कहा गया था।

32. **(b)** चाँद सिंह
Explanation: पाठ के अनुसार 'शेर के बच्चे' की उपाधि चाँद सिंह को मिली थी। उसने कुश्ती में सारे पहलवानों को हराकर ये उपधि प्राप्त की थी।

33. **(b)** पूरी व्यवस्था का पलट जाना
Explanation: कहानी के अनुसार पुराने राजा की जगह नए राजकुमार का आना पूरी व्यवस्था के बदल जाने का प्रतीक है। यह कोई सामान्य सत्ता परिवर्तन नहीं है।

34. **(c)** दीर्घतपा
Explanation: दीर्घतपा रेणु का एक उपन्यास है, जिसमे इन्होंने महिलाओं के उत्पीड़न को चित्रित करके उजागर किया है।

35. **(a)** आत्मविश्वास देकर
Explanation: कहानी में महामारी के समय पहलवान की ढोलक ने मरते हुए लोगों को आत्मविश्वास दिया, उन्हें ढाढ़स बँधाया। इससे तड़पकर मरने वाले भी एक सुकून के साथ मरे।

36. **(b)** वनतुलसी की गंध
Explanation: वनतुलसी की गंध फणीश्वरनाथ रेणु का संस्मरण है, जो 1984 में प्रकाशित हुआ था।

37. **(c)** गरीबी के कारण
Explanation: कहानी के अनुसार जिन गरीब किसानों के पास खाने के लिए दो वक्त की रोटी न हो, वे किस आहार के आधार पर कुश्ती करेंगे। गरीबी के कारण किसानों के बच्चे कुश्ती नहीं कर सकते थे।

38. **(b)** दीर्घतपा
Explanation: फणीश्वर नाथ रेणु जी का दीर्घतपा कहानी संग्रह नहीं है।

39. **(b)** ढोल
Explanation: पहलवान ने अपना गुरु ढोल को ही बनाया था।

40. **(c)** नौ वर्ष
Explanation: लुट्टन पहलवान जब नौ वर्ष का था, तब उसके माता - पिता का स्वर्गवास हो गया था।

Solution

Class 12 - Mathematics

Mathematics

1. **(b)** R
   Explanation: Since x = 1, and x = 2 satisfy the numerator of the given rational function, therefore the factors in the denominator are cancelled with the corresponding factors in the numerator. Hence the function is defined at every real number and therefore is continuous at every point.
2. **(d)** f (x) is not derivable at x = 1.
   Explanation: Here, $f(x) = |x - 1|\ x \in R$. So $f(x)$ is not derivable when x - 1 = 0 i.e. at x = 1
3. **(a)** $-\frac{2}{1+x^2}$
   Explanation: $y = \sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$
   Put, $x = \tan\theta \Rightarrow \theta = \tan^{-1}x$
   $y = \sin^{-1}\left(\frac{1-\tan^2\theta}{1+\tan^2\theta}\right)$
   y = $\sin^{-1}$(cos 2θ)
   $y = \sin^{-1}\left[\sin\left(\frac{\pi}{2} - 2\theta\right)\right]$
   $y = \frac{\pi}{2} - 2\theta$
   $y = \frac{\pi}{2} - 2\tan^{-1}x$
   $\frac{dy}{dx} = -\frac{2}{1+x^2}$
4. **(c)** 1 - y^2
   Explanation: $\frac{dy}{dx} = \frac{d}{dx}\left(\frac{e^x-e^{-x}}{e^x+e^{-x}}\right) = \frac{(e^x+e^{-x})(e^x+e^{-x})-(e^x-e^{-x})(e^x-e^{-x})}{(e^x+e^{-x})^2} = \frac{(e^x+e^{-x})^2}{(e^x+e^{-x})^2} - \frac{(e^x-e^{-x})^2}{(e^x+e^{-x})^2} = 1 - y^2$
5. **(c)** does not exist
   Explanation: Put, $u = \sec^{-1}\left(\frac{1}{2x^2+1}\right)$ and $v = \sqrt{1+3x}$
   $\Rightarrow \frac{dv}{dx} = \frac{1}{2\sqrt{1+3x}} \times 3$
   But at $x = \frac{-1}{3}\ \frac{dv}{dx}$ does not exist
   Hence, derivative of $\sec^{-1}\left(\frac{1}{2x^2+1}\right)$
   with respect to $\sqrt{1+3x}$ does not exist.
6. **(d)** $\frac{3}{4t}$
   Explanation: We have, $x = t^2, y = t^3$
   $\therefore \frac{dx}{dt} = 2t$ and $\frac{dy}{dt} = 3t^2$
   $\therefore \frac{dy}{dx} = \frac{dy/dt}{dx/dt} = \frac{3t^2}{2t} = \frac{3}{2}t$
   On further differentiating w.r.t. x, we get
   $\frac{d^2y}{dx^2} = \frac{3}{2} \cdot \frac{d}{dt}t \cdot \frac{dt}{dx}$
   $= \frac{3}{2} \cdot \frac{1}{2t}\left[\because \frac{dt}{dx} = \frac{1}{2t}\right]$
   $= \frac{3}{4t}$
7. **(d)** None of these
   Explanation: $f'(x) = \frac{d}{dx}(|x|) = \frac{x}{|x|}$,which does not exist at x = 0 .
8. **(d)** $(-\infty, \infty)$
   Explanation: We have f(x) = x|x|
   Where

$$f(x) = \begin{cases} -x^2, & x < 0 \\ 0, & x = 0 \\ x^2, & x > 0 \end{cases}$$

We have $-x^2$ and x^2 which being polynomial functions are continuous and differentiable.
The only possible point of non-differentiability can be x =0.
LHD at x =0,

$\lim_{x \to 0^-} \frac{f(x)-f(0)}{x-0} = \lim_{h \to 0} \frac{f(0-h)-f(0)}{0-h-0}$

$= \lim_{h \to 0} \frac{(0-h)^2-(0)}{-h} = 0$

RHD at x =0,

$\lim_{x \to 0^+} \frac{f(x)-f(0)}{x-0} = \lim_{h \to 0} \frac{f(0+h)-f(0)}{0+h-0}$

$= \lim_{h \to 0} \frac{(0+h)^2-(0)}{h} = 0$

$\because$ LHD = RHD = f(0)
$\therefore$ f(x) is differentiable at x =0.

9. **(b)** $\frac{\sin^2(a+y)}{\sin a}$

Explanation: $x \sin(a+y) = \sin y \Rightarrow x = \frac{\sin y}{\sin(a+y)}$

$\Rightarrow \frac{dx}{dy} = \frac{\sin(a+y)\cos y - \sin y \cos(a+y)}{\sin^2(a+y)}$

$= \frac{\sin(a+y-y)}{\sin^2(a+y)} = \frac{\sin a}{\sin^2(a+y)}$

$\Rightarrow \frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$

10. **(a)** – tan t

Explanation: $\frac{dy}{dx} = \frac{\frac{dy}{dt}}{\frac{dx}{dt}} = \frac{3a\sin^2 t \cos t}{3a\cos^2 t(-\sin t)} = -\tan t$

11. **(a)** $\frac{\cos x}{2y-1}$

Explanation: $\because y = (\sin x + y)^{1/2}$

$\therefore \frac{dy}{dx} = \frac{1}{2}(\sin x + y)^{-1/2} \cdot \frac{d}{dx}(\sin x + y)$

$\Rightarrow \frac{dy}{dx} = \frac{1}{2} \cdot \frac{1}{(\sin x + y)^{12}} \cdot \left(\cos x + \frac{dy}{dx}\right)$

$\Rightarrow \frac{dy}{dx} = \frac{1}{2y}\left(\cos x + \frac{dy}{dx}\right) \left[\because (\sin x + y)^{1/2} = y\right]$

$\Rightarrow \frac{dy}{dx}\left(1 - \frac{1}{2y}\right) = \frac{\cos x}{2y}$

$\therefore \frac{dy}{dx} = \frac{\cos x}{2y} \cdot \frac{2y}{2y-1} = \frac{\cos x}{2y-1}$

12. **(d)** $x\frac{d^2y}{dx^2} = y_1$

Explanation: $y = a + bx^2$

$\frac{dy}{dx} = 2bx$

$\frac{d^2y}{dx^2} = 2b$

$\Rightarrow \frac{d^2y}{dx^2} = \frac{1}{x}\frac{dy}{dx}$

$\Rightarrow x\frac{d^2y}{dx^2} = \frac{dy}{dx}$

13. **(a)** either positive or zero

Explanation: If f is strictly increasing function , then f ' (x) can be 0 also. For example, $f(x) = x^3$ is strictly increasing, but its derivative is 0 at x = 0. As another example, take f(x) = x + cosx; here f '(x) = 1 – sinx, which is either +ve or 0 and the function x + cos x is strictly increasing.

14. **(c)** $xy_1 + 2$

Explanation: $y = (\sin^{-1} x)^2$

$y_1 = 2\sin^{-1} \times \frac{1}{\sqrt{1-x^2}}$

$\Rightarrow \sqrt{1-x^2}y_1 = 2\sin^{-1} x$

Again differentiating w.r.t. to x we get

$\sqrt{1-x^2}y_2 - y_1\frac{x}{\sqrt{1-x^2}} = \frac{2}{\sqrt{1-x^2}}$

$\Rightarrow (1 - x^2)\, y_2 = xy_1 + 2$

15. **(c)** $f'(1^-) = -1$

Explanation: Given that $f(x) = \left\{ \begin{matrix} -\log_e x, 0 < x < 1 \\ \log_e x, x \geq 1 \end{matrix} \right\}$

Differentiability at x =1,

LHD at x =1,

$\lim\limits_{x\to 1^-} \frac{f(x)-f(1)}{x-1} = \lim\limits_{h\to 0} \frac{f(1-h)-f(1)}{1-h-1}$

$= \lim\limits_{h\to 0} \frac{\log 1-h}{-h} = -1$

RHD at x =1,

$\lim\limits_{x\to 1^+} \frac{f(x)-f(1)}{x-1} = \lim\limits_{h\to 0} \frac{f(1+h)-f(1)}{1+h-1}$

$= \lim\limits_{h\to 0} \frac{\log(1+h)}{h} = 1$

So, $f'(1^+) = 1$ and $f'(1^-) = -1$

16. **(c)** $y_2 = \frac{b\sin x}{(a+b\cos x)^2}$

Explanation: $y_2 = \frac{b\sin x}{(a+b\cos x)^2}$

Hint: Take $A = \frac{2}{\sqrt{a^2-b^2}}$, and $B = \frac{a-b}{a+b}$

17. **(c)** 1

Explanation: $f(x) = \frac{\sin^{-1} x}{\sqrt{1-x^2}}$

$\Rightarrow \sqrt{1-x^2}\ f(x) = \sin^{-1}x$

Differentiating both sides we get,

$\sqrt{1-x^2}f'(x) - \frac{x}{\sqrt{1-x^2}}f(x) = \frac{1}{\sqrt{1-x^2}}$

$\Rightarrow (1 - x^{2)}\, f'(x) - x\, f(x) = 1$

18. **(c)** $-m^2y$

Explanation: $y = a\sin mx + b\cos mx \Rightarrow y_1 \quad = am\cos mx - bm\sin mx$

$\Rightarrow y_2 = -am^2\sin mx - bm^2\cos mx$

$\Rightarrow y_2 = -m^2(a\sin mx + b\cos mx) = -m^2y$

19. **(c)** -1/2

Explanation: $y = \tan^{-1}\left(\frac{\cos x}{1+\sin x}\right)$

$y = \tan^{-1}\left(\frac{\cos^2\frac{x}{2}-\sin^2\frac{x}{2}}{\left(\cos\frac{x}{2}+\sin\frac{x}{2}\right)^2}\right)$

$y = \tan^{-1}\left(\frac{\left(\cos\frac{x}{2}+\sin\frac{x}{2}\right)\left(\cos\frac{x}{2}-\sin\frac{x}{2}\right)}{\left(\cos\frac{x}{2}+\sin\frac{x}{2}\right)^2}\right)$

$y = \tan^{-1}\left(\frac{\cos\frac{x}{2}-\sin\frac{x}{2}}{\cos\frac{x}{2}+\sin\frac{x}{2}}\right)$

$y = \tan^{-1}\left(\frac{1-\tan\frac{x}{2}}{1+\tan\frac{x}{2}}\right)$

$y = \frac{\pi}{4} - \frac{x}{2}$

$\frac{dy}{dx} = -\frac{1}{2}$

20. **(b)** f(x) is continuous for all x in its domain but differentiable at x = ± 1

Explanation: Given that the f(x) = $|\log|x||$ where

$$|x| = \begin{Bmatrix} -x, -\infty < x < -1 \\ -x, -1 < x < 0 \\ x, 0 < x < 1 \\ x, 1 < x < \infty \end{Bmatrix}$$

$$\log|x| = \begin{Bmatrix} \log(-x), -\infty < x < -1 \\ \log(-x), -1 < x < 0 \\ \log x, 0 < x < 1 \\ \log x, 1 < x < \infty \end{Bmatrix}$$

$$|\log|x|| = \begin{Bmatrix} \log(-x), -\infty < x < -1 \\ -\log(-x), -1 < x < 0 \\ -\log x, 0 < x < 1 \\ \log x, 1 < x < \infty \end{Bmatrix}$$

We can see that function is continuous for all x. Now, checking the points of non differentiability.

LHD at x =1,

$\lim_{x\to 1^-} \frac{f(x)-f(1)}{x-1} = \lim_{h\to 0} \frac{f(1-h)-f(1)}{1-h-1}$

$= \lim_{h\to 0} \frac{\log(1-h)-\log 1}{-h} = -1$

RHD at x =1,

$\lim_{x\to 1^+} \frac{f(x)-f(1)}{x-1} = \lim_{h\to 0} \frac{f(1+h)-f(1)}{1+h-1}$

$= \lim_{h\to 0} \frac{\log(1+h)-\log 1}{h} = 1$

$\because \text{LHD} \neq \text{RHD}$

So, function is not differentiable at x =1.

LHD at x =-1,

$\lim_{x\to -1^-} \frac{f(x)-f(-1)}{x-(-1)} = \lim_{h\to 0} \frac{f(-1-h)-f(-1)}{-1-h-(-1)}$

$= \lim_{h\to 0} \frac{\log(-1-h)-\log(-1)}{-h} = -1$

RHD at x =-1,

$\lim_{x\to -1^+} \frac{f(x)-f(-1)}{x-1} = \lim_{h\to 0} \frac{f(-1+h)-f(-1)}{(-1)+h-(-1)}$

$= \lim_{h\to 0} \frac{\log(-1+h)-\log(-1)}{h} = 1$

$\because \text{LHD} \neq \text{RHD}$

So, function is not differentiable at x =-1.

At x =0 function is not defined.

$\therefore$ Function is not differential at x = 0 and ±1.

21. **(c)** $\lambda > 1/2$

Explanation: $\lambda > 1/2$

22. **(a)** point of inflexion at x = 0

Explanation: Given f(x) = x^3

f'(x) = $3x^2$

For point of inflexion, we have f'(x) = 0

$f'(x) = 0 \Rightarrow 3x^2 = 0 \Rightarrow x = 0$

Hence, f(x) has a point of inflexion at x = 0.
But x = 0 is not a local extremum as we cannot find an interval I around x = 0 such that
$f(0) \geq f(x) \quad or \quad f(0) \leq f(x) \qquad for \quad all \quad x \epsilon I$

23. **(a)** (6, 36)

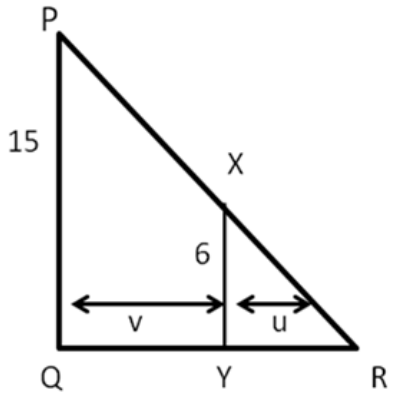
Explanation: $y = 12x - x^2$
Slope of the tangent = 0
$\frac{dy}{dx} = 0$
12 - 2x = 0
$\Rightarrow$ x = 6
$y = 12x - x^2$
$\Rightarrow$ y = 36
Point on curve is (6, 36)

24. **(c)** -16/3 unit/sec

Explanation: $s = t^3 - 4t^2 + 5$
$v = \frac{ds}{dt} = 3t^2 - 8t$
$a = \frac{d^2s}{dt^2} = 6t - 8$
Given that a = 0
$6t - 8 = 0 \Rightarrow t = \frac{4}{3}$
velocity at t $= \frac{4}{3}$
$\Rightarrow v = 3\left(\frac{4}{3}\right)^2 - 8\left(\frac{4}{3}\right) = \frac{-16}{3}$

25. **(b)** 6ft/sec

Explanation:



$\frac{15}{6} = \frac{u+v}{u}$
$\Rightarrow \frac{15}{6} = \frac{v}{u} + 1$
$\Rightarrow \frac{v}{u} = \frac{3}{2}$
$\Rightarrow u = \frac{2v}{3}$
$\Rightarrow \frac{du}{dt} = \frac{2}{3}\frac{dv}{dt}$
$\Rightarrow \frac{du}{dt} = \frac{2}{3} \times 9 = 6\text{ft/sec}$

26. **(b)** $-\infty, \infty$

Explanation: $(-\infty, \infty)$
$f(x) = \cot^{-1} x + x$
$f'(x) = \frac{-1}{1+x^2} + 1$
$= \frac{-1+1+x^2}{1+x^2}$
$= \frac{x^2}{1+x^2} \geq 0, \forall x \in R$
So, f (x) is increasing on $(-\infty, \infty)$

27. **(c)** $a^2 - 3b + 15 < 0$
Explanation: $a^2 - 3b + 15 < 0$

28. **(c)** $2.16\pi\ m^2$
Explanation: Given, radius of the sphere is 9 m
Error in the measurement of radius = Δr = 0.03 m
We have Surface area of a sphere = S = $4\pi r^2$
Now, dS = $\left(\frac{dS}{dr}\right) \triangle r = 8\pi r \triangle r = 8\pi.9 \times 0.03 = 2.16\pi \quad m^2$

29. **(d)** $|x| \geq 3$
Explanation: $|x| \geq 3$

30. **(a)** a = 1, b = – 2, c = 1
Explanation: $y = ax^3 + bx^2 + cx$
$\Rightarrow \frac{dy}{dx} = 3ax^2 + 2bx + c.$
At (0 , 0) , slope of tangent =$\tan 45^\circ$ = 1.$\Rightarrow$ c = 1. At (1 ,0) , slope of tangent = 0.$\Rightarrow$3a+2b+c=0. From this,we get ,3a+2b=-1.....(1)
Also, when x = 1 , y = 0 , therefore , a + b + c = 0 . From this,we get, a+b=-1.....(2)
From(1) and (2),we get,
a=1 ,b= -2 and c =1

31. **(a)** one maxima and one minima
Explanation:
We have, f(x) = $2x^3 - 3x^2 - 12x + 4$
f'(x) = $6x^2 - 6x - 12$
f'(x) = 0
$\Rightarrow 6(x^2 - x - 2) = 0$
$\Rightarrow 6(x + 1)(x - 2) = 0$
$\Rightarrow$ x = -1 and x = 2
The sign scheme of f'(x) is a shown in the following figure

From the figure, s = -1 is point of local maxima and x = 2 is point of local minima.
So, f(x) has one maxima and one minima.

32. **(c)** a > 1
Explanation: a > 1

33. **(c)** x + y = 0
Explanation: Since , $\frac{dy}{dx} = \cos x$, therefore , slope of tangent at (0 , 0) = cos 0 = 1
and hence slope of normal at (0 , 0) is - 1 .
Equation of normal at (0,0) is,
y - 0 = slope of normal $\times$(x - 0)
y = -1(x)
x + y = 0

34. **(c)** -39
Explanation: Given function,
f(x) = $3x^4 - 8x^3 - 48x + 25$
F'(x) = $12x^3 - 24x^2 - 48 = 0$
F'(x) = $12(x^3 - 2x^2 - 4) = 0$
Differentiating again, we obtain
F''(x) = $3x^2 - 4x = 0$
x(3x - 4) = 0
x = 0 or x = $\frac{4}{3}$

Putting the value in equation, we obtain
f(x) = -39

35. **(c)** $\frac{\cos x}{(2y-1)}$

Explanation: Given:

$\Rightarrow y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + }}}$

We can write it as

$\Rightarrow y = \sqrt{\sin x + y}$

Squaring we get

$\Rightarrow y^2 = \sin x + y$

Differentiating with respect to x,we get

$\Rightarrow 2y\frac{dy}{dx} = \cos x + \frac{dy}{dx}$

$\Rightarrow \frac{dy}{dx} = \frac{\cos x}{(2y-1)}$

36. **(d)** a^2

Explanation: Given,F(x) is continuous at x = 0.

$\Rightarrow f(x) = \lim_{x\to 0} \frac{\sin^2 ax}{x^2}$

$\Rightarrow f(x) = \lim_{x\to 0} \frac{\sin^2 ax}{x^2} \times \frac{a^2}{a^2}$

$\Rightarrow f(x) = \lim_{x\to 0} \left(\frac{\sin ax}{ax}\right)^2 \times a^2$

$\Rightarrow f(x) = a^2$

$\therefore k = a^2$

37. **(d)** (-1, 1)

Explanation: We have,$\Rightarrow f(x) = \frac{x}{x^2+1}$

$\Rightarrow f'(x) = \frac{x^2-2x^2+1}{x^2+1}$

$\Rightarrow f'(x) = -\frac{x^2-1}{x^2+1}$

$\Rightarrow$ for critical points f'(x) = 0

when f'(x) = 0

We get x = 1 or x = -1

When we plot them on number line as f'(x) is multiplied by -ve sign we get

For x > 1 function is decreasing

For x < -1 function is decreasing

But between -1 to 1 function is increasing

$\therefore$ Function is increasing in (-1, 1)

38. **(b)** $\frac{1}{2}$

Explanation: Given that $y = \tan^{-1}(\sec x + \tan x)$

Hence, $y = \tan^{-1}\left(\frac{1+\sin x}{\cos x}\right)$

Using $\cos x = \cos^2\frac{x}{2} - \sin^2\frac{x}{2}$, $\sin x = 2\sin\frac{x}{2}\cos\frac{x}{2}$ and $\cos^2\theta + \sin^2\theta = 1$

Hence, $y = \tan^{-1}\left(\frac{\cos^2\frac{x}{2}+\sin^2\frac{x}{2}+2\sin\frac{x}{2}\cos\frac{x}{2}}{\cos^2\frac{x}{2}-\sin^2\frac{x}{2}}\right) = \tan^{-1}\left(\frac{\left(\cos\frac{x}{2}+\sin\frac{x}{2}\right)^2}{\left(\cos\frac{x}{2}-\sin\frac{x}{2}\right)\left(\cos\frac{x}{2}+\sin\frac{x}{2}\right)}\right)$

$\Rightarrow y = \tan^{-1}\left(\frac{\cos\frac{x}{2}+\sin\frac{x}{2}}{\cos\frac{x}{2}-\sin\frac{x}{2}}\right)$

Dividing by $\cos\frac{x}{2}$ in numerator and denominator, we obtain

$y = \tan^{-1}\frac{1+\tan\frac{x}{2}}{1-\tan\frac{x}{2}}$

Using $\tan\left(\frac{\pi}{4}+x\right) = \frac{1+\tan x}{1-\tan x}$, we obtain

$y = \tan^{-1}\tan\left(\frac{\pi}{4}+\frac{x}{2}\right) = \frac{\pi}{4}+\frac{x}{2}$

Differentiating with respect to x, we

$\frac{dy}{dx} = \frac{1}{2}$

39. **(c)** $\tan\theta$

Explanation: $x = a(\cos\theta + \theta\sin\theta)$,we get

$\therefore \frac{dx}{d\theta} = a(-\sin\theta + \sin\theta + \theta\cos\theta)$

$\Rightarrow \frac{d\theta}{dx} = \frac{1}{a\theta\cos\theta}$

$y = a(\sin\theta - \theta\cos\theta)$,we get

$\therefore \frac{\mathrm{dy}}{\mathrm{d}\theta} = a(\cos\theta - (\cos\theta + \theta(-\sin\theta))$

$\Rightarrow \frac{dy}{d\theta} = \mathrm{acos}\theta - \mathrm{acos}\theta + \theta\,\mathrm{asin}\theta$

$\Rightarrow \frac{\mathrm{dy}}{\mathrm{d}\theta} = \mathrm{a}\theta\sin\theta$

$\Rightarrow \frac{\mathrm{dy}}{\mathrm{dx}} = \frac{\mathrm{dy}}{\mathrm{d}\theta} \times \frac{\mathrm{d}\theta}{\mathrm{dx}}$

$\Rightarrow \frac{dy}{dx} = a\theta\sin\theta \times \frac{1}{a\theta\cos\theta}$

$\Rightarrow \frac{dy}{dx} = \tan\theta$

40. **(a)** 2

Explanation: Given xy = 1. To find minimum value of x + y

$\Rightarrow$ y = $\frac{1}{x}$

f(x) = x + $\frac{1}{x}$

$\Rightarrow$ f'(x) = 1 - $\frac{1}{x^2}$

To find local maxima or minima we have

f'(x) = 0

1 - $\frac{1}{x^2}$ = 0

$\Rightarrow$ x = $\pm$1 $\Rightarrow$ y =$\pm$1

But given that x > 0 $\Rightarrow$ x = 1, y = 1

f''(x) = $\frac{2}{x^3}$

f''(1)= 2 > 0

function has minima at x = 1

f(1) = 2.

Solution

Class 12 - Physics

Physics

1. **(d)** Charge
   Explanation: Charge

2. **(d)** 5 mV/m
   Explanation: The total resistance is the sum of the resistance of the potentiometer and the external resistance.
   $R = R_{pot} + R_{ext} = 5 + 995 = 1000$ ohms
   The current through the potentiometer wire $I = \frac{E}{R} = \frac{10}{1000} = 0.01A$
   The potential drop across the potentiometer wire is
   $V = I \times R_{pot}$
   $\Rightarrow V = 0.01 \times 5$
   V = 0.05V
   The potential gradient = (potential drop across the potentiometer wire) / (length of the potentiometer wire)
   $= \frac{0.05}{10}$
   $= 5 \times 10^{-3} V/m$
   = 5 mV/m

3. **(d)** 10%
   Explanation: Power, $P = I^2R$
   $\Rightarrow \frac{P_2}{P_1} = \left[\frac{I_2}{I_1}\right]^2$
   $\Rightarrow \frac{P_2}{P_1} = \left[\frac{0.95 \times 0.95 I^2}{I^2}\right] = 0.9025$
   $\therefore$ Decrease in power $= \left(1 - \frac{P_2}{P_1}\right) \times 100$
   Power decrease $\approx$ 10%

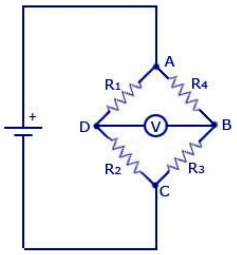
4. **(d)** Drift velocity alone.
   Explanation: As $I = Anev_d$' So current $I \propto v_d$
   Although I also depend on n, the number of free electrons which increases on increasing temperature which makes more collision between electrons increases the resistance or decrease the current and we obtain a large amount of current even drift velocity is small because electron no. Density is very large.

5. **(b)** basically a long piece of uniform wire
   Explanation: Potentiometer is a long wire of uniform cross section made of manganin.It is actually a wire with high resistivity (ρ) with uniform cross-sectional area A. Thus, throughout the wire, it has uniform resistance.

6. **(d)** Increase in the rate of collisions between the carriers and vibrating atoms of the conductor
   Explanation: When temperature increases, the thermal speed of the electrons increases as well as, the amplitude of vibration of the positive ions inside the metal conductor also increase, about their mean positions. Thus, the collisions between the electrons and the positive metal ions become more frequent and this decreases the relaxation time, t, leading to an increase in the resistivity of the conductor.

7. **(d)** the magnitude of the drift velocity per unit electric field
   Explanation: Mobility is defined as the drift velocity acquired by the charge per unit electric field strength. Faster the particle moves in a given electric field, strength greater is the mobility.
   $\mu = \frac{v_d}{E}$

8. **(d)** Not change
   Explanation: Let initially arrangement is as follow,



For this balanced condition is given as

$\frac{R_1}{R_4} = \frac{R_2}{R_3}$.....(i)

If position of cell and galvanometer are interchanged, i.e cell across B and D and galvanometer between A and C then balanced condition is given by

$\frac{R_2}{R_1} = \frac{R_3}{R_4}$.....(ii)

Rearranging equation (ii)

$\frac{R_2}{R_3} = \frac{R_1}{R_4}$

Hence balance point remains same.

9. **(c)** Potential gradient does not change
Explanation: Potential gradient $= \frac{V}{I}$
If internal resistance of a battery is negligible then it does not affect equivalent resistance of potentiometer so potential gradient of potentiometer remains unchanged.

10. **(d)** copper decreases and that of germanium increases
Explanation: Copper is a conductor and we know that for conductors, resistance is directly proportional to temperature. Therefore on decreasing temperature resistance also decreases.
Whereas, germanium is a semiconductor and for semiconductors, resistance is inversely proportional to temperature. So on decreasing temperature resistance increases.

11. **(a)** A potentiometer
Explanation: A potentiometer

12. **(b)** m = 12, n = 2
Explanation: m = 12, n = 2

13. **(d)** 75 cm
Explanation: If the battery has e.m.f E, resistance of the potentiometer is R and the internal resistance of the battery is r, then the current I flowing in the potentiometer wire is given by,

$I = \frac{E}{(R+r)}$

$I = \frac{2}{(4+1)}$

I = 0.4 A

The potential difference V across the potentiometer

$V = I \times R$

$\Rightarrow V = 0.4 \times 4$

V = 1.6V

The potential gradient = (potential drop across the potentiometer)/ length of the potentiometer wire)

$= \frac{V}{l}$

$= \frac{1.6}{1}$

$\Rightarrow$ Potential gradient = 1.6V/m

The emf of the cell

$E_1 = (Potential\ gradient \times Balancing\ length)$

$\Rightarrow L = \frac{E_1}{Potential\ gradient} = \frac{1.2}{1.6}$

L = 0.75 m

or L = 75 cm

14. **(b)** The algebraic sum of changes in potential around any closed loop must be zero.
Explanation: Kirchhoff's loop rule is based on the principle of conservation of energy. Since work done in

transporting a charge in a closed loop is zero. The algebraic sum (since potential differences can be both positive and negative) of potential differences around any closed loop is always zero.

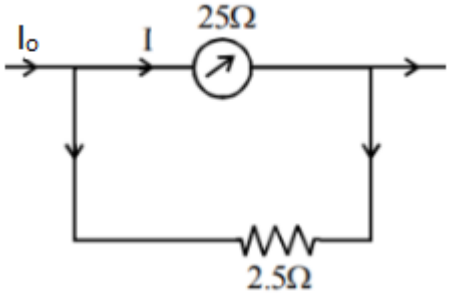
15. **(a)** along with a very slow net motion in the opposite direction of the field
Explanation: The electrons in a conductor have random velocities and when an electric field is applied, they suffer repeated collisions and in the process move with a small average velocity, opposite to the direction of the field. This is equivalent to positive charge flowing in the direction of the field.

16. **(a)** the electron velocity will decrease in magnitude
Explanation: The force experienced by an electron in a combined action of magnetic and electric fields is $\vec{F} = -e\left(\vec{v} \times \vec{B} + \vec{E}\right)$.
Since the electron moves in the same direction of the magnetic field, it experiences no force due to the magnetic field.
$-e\left(\vec{v} \times \vec{B}\right) = 0.$
The electron is not deflected from its straight line path. The total force on the electron, $\vec{F} = -e\left(\vec{E}\right)$.
It experiences a force opposite to the direction of the electric field and to its direction of motion. The electron suffers retardation and its velocity decreases.

17. **(c)** $\frac{1}{\pi}$
Explanation: I = 1 A
L = 2 = $2\,\pi \mathrm{r} \Rightarrow \mathrm{r} = \frac{1}{\pi}$
Now, M = $\mathrm{I} \times \mathrm{A} = \mathrm{I} \times \pi \mathrm{r}^2$ = $\frac{1}{\pi}$

18. **(c)** 250 μT
Explanation: The magnetic field at the centre of a coil of radius R and number of turns N , carrying a current I is
$B_0 = \frac{\mu_0 NI}{2R}$
At a point distance x from the coil, the field is
$B_x = \frac{\mu_0 NIR^2}{2\left(R^2+x^2\right)^{\frac{3}{2}}}$
$\frac{B_0}{B_x} = \frac{\left(R^2+x^2\right)^{\frac{3}{2}}}{R^3} = \frac{\left(3^2+4^2\right)^{\frac{3}{2}}}{3^3} = \left(\frac{5}{3}\right)^3$
$B_0 = \left(\frac{5}{3}\right)^3 \times 54\mu T = 250\mu T$

19. **(c)** $\frac{I}{I_0} = \frac{1}{11}$
Explanation:



$I = \frac{I_o \times 2.5}{(25+2.5)} = I_o \times \frac{25}{275} = \frac{1}{11} \times I_o$
$\Rightarrow \frac{\mathrm{I}}{\mathrm{I}_0} = \frac{1}{11}$

20. **(c)** $\frac{R_o}{n-1}$
Explanation: If the shunt resistance be S, then $IR_0 = (nI - I)\,S$
Therefore, $S = \frac{R_0}{n-1}$

21. **(a)** 0.8
Explanation: We know that, $B = \frac{\mu_0 NI}{2r}$

If the number of turns is doubled the radius is halved. Therefore,

$B' = \frac{\mu_0(2N)I}{2(r/2)} = 4B = 4 \times 0.2 = 0.8\text{T}$

22. **(d)** 150

Explanation: $R = \frac{V}{I_g} - G$

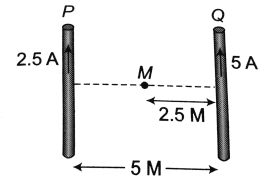
V = 2.5 V ; G = 100 Ohm ; $I_g = 0.01\ A$

On solving we get,

R = 150 Ohm

23. **(d)** $\frac{\mu_0}{2\pi}$

Explanation:



$B_{\#t} = B_Q - B_P$

$= \frac{\mu_0}{4\pi}\frac{.2}{r}(i_Q - i_P)$

$= \frac{\mu_0}{4\pi} \times \frac{2}{2.5}(5 - 2.5) = \frac{\mu_0}{2\pi}$

24. **(d)** $\frac{G}{49}$

Explanation: If I_g is the current through the galvanometer of resistance G and I is the total current through it, $I_g G = (I - I_g)\,S$,

where S is the shunt resistance $S = \frac{I_g}{I - I_g}G$.

Since $I_g = \frac{2}{100}I = 0.02I$

$\therefore$ S = $\frac{I_g}{I - I_g}G = \frac{0.02I}{I - 0.02I}G = \frac{2}{98}G = \frac{G}{49}$

25. **(d)** path will change

Explanation: As magnetic force always act perpendicular to the direction of motion, so path or direction will change without any change in speed.

26. **(d)** ampere metre

Explanation: ampere metre

27. **(c)** 4B

Explanation: The radii of the coils in two cases are R_1 and R_2.

Then, $L = 2\pi R_1 = 2 \times 2\pi R_2 \Rightarrow R_2 = \frac{R_1}{2}$

$\therefore B = \frac{\mu_0 I}{2R_1}$ and $B' = \frac{\mu_0 nI}{2R_2} = \frac{\mu_0 2I}{2\left(\frac{R_1}{2}\right)} = 4\frac{\mu_0 I}{2R_1} = 4B$

28. **(d)** The needles become tangential to the ring

Explanation: The current carrying wire has a magnetic field around it and the lines of force are in the form of concentric circles with their centers on the wire. Magnetic force acts along the tangent to the circle i.e. along the direction of magnetic field.

29. **(d)** $n^2 B$

Explanation: If the length of the wire is L and the radii of the coils in two cases be R_1 and R_2. Then,

$L = 2\pi R_1 = n \times 2\pi R_2 \Rightarrow R_2 = \frac{R_1}{n}$

Now $B = \frac{\mu_0 I}{2R_1}$

and $B' = \frac{\mu_0 nI}{2R_2} = \frac{\mu_0 nI}{2\left(\frac{R_1}{n}\right)} = n^2\frac{\mu_0 I}{2R_1} = n^2 B$

30. **(a)** $1.9 \times 10^6 m/s$

Explanation: $Bqv = \frac{mv^2}{r}$

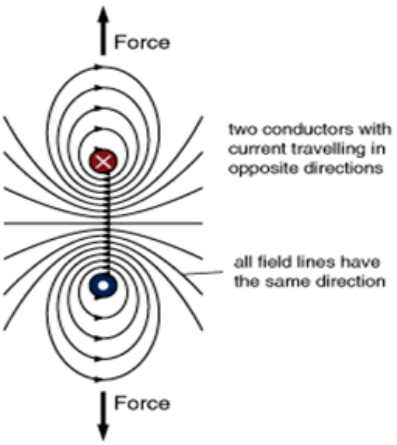
$Bqv = \frac{2E}{r}$

$v = \frac{2E}{rBq} = \frac{2 \times 10 \times 1.6 \times 10^{-19}}{0.105 \times 10^{-4} \times 1.6 \times 10^{-19}}$

$= 1.9 \times 10^6 m/s$

31. **(a)** twice the field due to each wire

Explanation: When two wires carry currents in the opposite direction, the magnetic field lines at any point midway between them have the same direction. The magnitudes of the fields add up. If the current in the wires are the same, the magnetic field at the midpoint will have twice the magnitude of the field produced by each wire.



32. **(c)** 2 : 1

Explanation: A solenoid is equivalent to a bar magnet.

For points at distances greater than the length of the solenoid, the field along the axis of the solenoid is $B_{axial} = \frac{\mu_0}{4\pi}\frac{2m}{x^3}$ and along the perpendicular bisector or equatorial line is

$B_{equatorial} = \frac{\mu_0}{4\pi}\frac{m}{x^3}$

Therefore, $\frac{B_{axial}}{B_{equatorial}} = \frac{2}{1}$

33. **(d)** $10^{-17}\mu_0$

Explanation: I = $\frac{q}{t}$ = q×frequency

Now, q = 100e = 1.6×10^{-17}C

So, I = $1.6 \times 10^{-17} \times 1 = 1.6 \times 10^{-17}$A

Given: r = 0.8 m

Thus, $B = \frac{\mu_0 I}{2r}$

$= 10^{-17}\mu_0$

34. **(b)** (n - 1)R_0

Explanation: For a range V, the current flowing is I, and V = IR_0

If a resistance R is connected in series, the range of the voltmeter increases to nV.

$nV = I(R_0 + R) = \frac{V}{R_0}(R_0 + R)$

nR_0 = R_0 + R

R = (n - 1)R_0

35. **(c)** 0.015 Ω

Explanation: The value of each division is 20μA. The range of the galvanometer $I_g = 20 \times 30 = 600\mu A$

To convert it into an ammeter of range I = 1A, a shunt S is connected in parallel to it.

$S = \frac{I_g}{I - I_g}G = \frac{600 \times 10^{-6}}{1 - 600 \times 10^{-6}} \times 25 = 0.015\Omega$

36. **(a)** 1:9

Explanation: If the wire has length L, when it is coiled into a coil of 1 turn of radius r, $L = 2\pi r$

When it is coiled into a coil of 3 turns of radius r', $L = 3 \times 2\pi r'$

$2\pi r = 3 \times 2\pi r'; r = 3r'$

The magnetic field in the first case, $B = \frac{\mu_0 I}{2\pi r}$

and in the second case, $B' = \frac{\mu_0 nI}{2\pi r'} = \frac{3\mu_0 I}{2\pi\frac{r}{3}} = 9\frac{\mu_0 I}{2\pi r}$

So, $\frac{B}{B'} = \frac{1}{9}$

37. **(b)** ni A

Explanation: The magnetic moment associated with a coil carrying current is given by the product of its area and the current through it.

M = niA

38. **(c)** $1.25 \times 10^{-5} T$

Explanation: $B = \frac{\mu_0 I}{2r} = \frac{4\pi \times 10^{-7} \times 1}{0.1}$

$= 12.56 \times 10^{-6}$

$= 1.25 \times 10^{-5} T$

39. **(a)** 10^{-6}

Explanation: The ratio of the forces is equal to

$\frac{F_m}{F_e} = \frac{\mu_0}{4\pi} \times \frac{v^2}{1/4\pi\varepsilon_0}$

= $\frac{10^{-7}}{9\times10^9} \times 9 \times 10^{10} = 10^{-6}$

40. **(a)** trajectory is an inward winding spiral

Explanation: When the electron is shot into a magnetic field it describes a circular path due to magnetic Lorentz force. $Bev = \frac{mv^2}{r}; v = \frac{Ber}{m}; v \propto r$

When the electron passes into a liquid, its velocity reduces progressively due to the frictional forces experienced in the liquid. As the velocity decreases, the radius also decreases and the path of the electron deviates from being circular and becomes an inward spiral, The kinetic energy of the electron also decreases. The revolution frequency $\nu = \frac{Be}{2\pi m}$ remains constant as it is independent of the velocity of the particle.

Solution

Class 12 - Chemistry

Chemistry

1. **(c)** N_2O_3

   Explanation: N2O3, which has a deep blue colour $N_2O_3+H_2O \rightarrow HNO_3+HNO_2$

   $2HNO_2 \rightarrow N_2O_3 + H_2O$

   Here, HNO_2 decolorizes $KMnO_4$ and HNO_3 oxidizes KI to I_2.

2. **(b)** SbH_3

   Explanation: As the bond dissociation energy decreases reducing nature increases. Therefore, SbH_3 will act as the strongest reducing agent due to minimum bond enthalpy.

3. **(d)** HF

   Explanation: As the size of the halogen atom increases the bond length between halogen and hydrogen decreases. Hence, bond dissociation enthalpy increase. Therefore, HF has the highest bond dissociation enthalpy.

4. **(d)** N_2 in both cases

   Explanation: $(NH_4)_2Cr_2O_7 \longrightarrow N_2 + Cr_2O_3 + 4H_2O$

   $Ba(N_3)_2 \longrightarrow 3N_2 + Ba$

   N_2 is form both the cases

5. **(c)** – 3 to +3

   Explanation: $MnO_2 + 4HCl \longrightarrow MnCl_2 + 2H_2O + Cl$ (greenish yellow gas)

   When excess Cl_2 reacts with NH_3 the products are NCl_3 and HCl

   $NH_3 + 3Cl_2 \longrightarrow NCl_3 + 3HCl$

   Oxidation state change from -3 to +3.

6. **(d)** Single N–N bond is stronger than the single P–P bond.

   Explanation: Nitrogen forms $p\pi$ - $p\pi$ multiple bonds and the bond strength is very high single N - N bond is weaker than the single P - P bond due to the smaller size of N as compared to P.

7. **(d)** 12

   Explanation: $2KClO_3 \rightarrow 2KCl + 3O_2$

   2mol of $KClO_3$ gives 3 mol of O_3.

   So 8 mol of potassium chlorate will yield = $\frac{8 \times 3}{2}$ = 12 mol of O_2.

8. **(a)** both O_2 and Xe have almost same ionisation enthalpy.

   Explanation: Bartlett had taken O_2 Pt as a base compound because O_2 and Xe both have almost same ionization enthalpy i.e O_2 (1175KJmol^{-1}) and Xe(1170KJmol^{-1}). The ionization enthalpies of noble gases are the highest in their respective periods due to their stable electronic configurations.

9. **(b)** HI gets oxidized to I_2

   Explanation: HI formed during the reaction is oxidized to I_2 which is violet in colour.

   $2NaCl + H_2SO_4 \longrightarrow Na_2SO_4 + 2HCl$

   In the case of iodine, the halogen acid obtained (HI) is oxidized to free iodine and HI reduce H_2SO_4 to SO_2.

   $2NaI + H_2SO_4 \longrightarrow Na_2SO_4 + 2HI \xrightarrow{H_2SO_4} 2H_2O + SO_2 + I_2$

10. **(c)** Nitrogen

    Explanation: Nitrogen does not show allotropy due to its weak N-N single bond.
    Therefore, the ability of the nitrogen to form a polymeric structure or more than the one structure becomes less. Hence, nitrogen does not show allotropy.

11. **(a)** H_2O

Explanation: The stability of hydrides decreases down the group so the most stable is H_2O. The thermal stability decreases as the atomic mass increases. Water dissociates at 2000^0C while tellurium hydride, H_2Te decomposes at room temperature. This is due to an increase in the bond length of M-H (M- O, S, Se, Te). Thus the thermal stability decreases as the atomic size increases. As with the increase in atomic size, the bond length also increases which decreases the thermal stability.

12. **(d)** NH_4Cl and $NaNO_2$

Explanation: Nitrogen gas can be prepared in the laboratory by heating a mixture of ammonium chloride and sodium nitrite in a test tube over a Bunsen burner.
$NH_4Cl + NaNO_2 \rightarrow$heat $N_2 + 2H_2O + NaCl$

13. **(d)** Mercury

Explanation: Ozone is detected by using Hg.
When ozone is passed through mercury, it loses its meniscus and sticks to the glass due to the formation of the mercurous oxide. This is called the tailing of mercury.
$2Hg(s) + O_3(g) \rightarrow Hg_2O(s) + O_2(g)$

14. **(a)** C

Explanation:

$$\begin{array}{l} H_2SO_4 \rightarrow H_2O + SO_2 + O] \times 2 \\ \underline{C + 2O \rightarrow CO_2} \\ \underline{C + 2H_2SO_4 \rightarrow CO_2 + 2SO_2 + 2H_2O} \end{array}$$

CO_2 and SO_2 are two gaseous products formed by oxidation Carbon by conc. H_2SO_4.

15. **(a)** BrO_2^-, BrF_2^+

Explanation: Isoelectronic pair have same number of electrons therefore,
BrO_2^- = 35 + 2 × 8 + 1 = 52
BrF_2^+ = 35 + 9 × 2 - 1 = 52

16. **(a)** It is more basic than NH_3.

Explanation: $P_4 + 3NaOH + 3H_2O \rightarrow \underset{(Phosphine)}{PH_3} + 3NaH_2PO_2$

Phosphine gas PH_3 is less basic than NH_3.

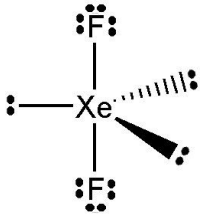
17. **(b)** An acidic oxide and anhydride of HNO_2.

Explanation: $N_2O_3 + H_2O \rightarrow 2HNO_2$

It is also called nitrous anhydride or nitrogen sesquioxide.

18. **(a)** Linear

Explanation: CN=0.5(V+M-C+A) For XeF_2 CN = 5 .So shape will be linear and structure will be trigonal bipyramidal. Xenon and the two fluorine atoms lie in a straight line while the three equatorial positions are occupied by three lone pairs of electrons. Hence it has a linear shape.



19. **(c)** BiH_3

Explanation: The reducing character of the hydrides of Group 15 elements increases from NH_3 to BiH_3(Bismuthine) because the reducing character depends upon the stability of the hydride. The greater the instability of hydride, the greater is its reducing character. Since the BiH_3 is least stable (because the size of a central atom is greatest and therefore its tendency to form stable covalent bond with small

hydrogen atom decreases, as a result, the bond strength decreases) in this series, BiH_3 is a strongest reducing agent.

20. **(a)** ZnO
Explanation: ZnO is an amphoteric oxide. it reacts with both acid and base. With HCl, it forms zinc chloride and water and with NaOH, it forms sodium zincate and water.
$ZnO(s) + 2HCl(l) \rightarrow ZnCl_2(s) + H_2O(l)$
$ZnO(s) + 2NaOH(l) \rightarrow Na_2ZnO_2(s) + H_2O$

21. **(a)** Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.
Explanation: Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

22. **(b)** Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.
Explanation: Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

23. **(d)** Assertion is INCORRECT but, reason is CORRECT.
Explanation: Assertion is INCORRECT but, reason is CORRECT.

24. **(c)** Assertion is CORRECT but, reason is INCORRECT.
Explanation: Assertion is CORRECT but, reason is INCORRECT.

25. **(d)** Assertion is INCORRECT but, reason is CORRECT.
Explanation: Assertion is INCORRECT but, reason is CORRECT.

26. **(b)** [Ar] $3d^5$
Explanation: Atomic number of Fe is 26 and it's electronic configuration is [Ar] $3d^6\ 4s^2$. When we remove 3 electrons, it becomes [Ar] $3d^5$.

27. **(d)** Cu^{2+}
Explanation: Cu^{2+} has an electronic configuration of [Ar] $3d^9$ with the presence of one unpaired electron which is responsible for paramagnetism with a magnetic moment of 1.8 - 2.2. It shows a blue colour due to the d-d transition of this unpaired electron in the visible region.

28. **(a)** $Cr_2O_7^{2-}$
Explanation: Chromate ion (CrO_4^{2-}) changes to dichromate ion ($Cr_2O_7^{2-}$) on acidification.
$2\ CrO_4^{2-} + 2\ H^+ \rightarrow Cr_2O_7^{2-} + H_2O$

29. **(a)** Dimethylglyoxime
Explanation: Ni^{2+} forms complex with DMG which is red in colour.

30. **(c)** f-block
Explanation: In f-block elements with an increase in atomic number, atomic radii decrease smoothly due to lanthanide contraction.

31. **(b)** $3d^5$
Explanation: The greater the number of the unpaired electrons, the higher will be its value of the magnetic moment. Since $3d^5$ has 5 unpaired electrons hence highest magnetic moment as compared to others.
$\mu = \sqrt{5(5+2)}$
$= \sqrt{35}$
= 5.95 BM

32. **(a)** Fe and Mg
Explanation: Haemoglobin contains Fe and Chlorophyll contains Mg.

33. **(c)** They are chemically very reactive.
Explanation: Interstitial compounds are chemically inert not reactive.

34. **(b)** All of these

Explanation: Ammonia forms a stable dark blue coloured complex ion $[Cu(NH_3)_4]^{2+}$ with Cu^{2+} ions by replacing water molecule ligands.

35. **(b)** Mn^{2+}

Explanation: For Manganese, +2 is the most stable oxidation state because of d^5 configuration.

36. **(c)** CuF_2

Explanation: Cu^{2+} has 1 unpaired electron in CuF_2 molecule, hence it is coloured in solid state.

37. **(b)** Both assertion and reason areCORRECT but, reason is NOT THE CORRECT explanation of the assertion.
Explanation: Both assertion and reason areCORRECT but, reason is NOT THE CORRECT explanation of the assertion.

38. **(c)** Assertion is CORRECT but, reason is INCORRECT.
Explanation: Assertion is CORRECT but, reason is INCORRECT.

39. **(a)** Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.
Explanation: Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

40. **(a)** Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.
Explanation: Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

Solution

Class 12 - Biology

Biology

1. **(b)** A > B > C > D
   Explanation: The correct sequence of events involving gene expression includes the formation of the primary transcript, regulation of splicing, transport of mRNA from the nucleus to the cytoplasm, and translation.
2. **(d)** negative and positive, respectively
   Explanation: There is a set of positively charged, basic proteins called histones. The negatively charged DNA is wrapped around the positively charged histone octamer to form a structure called a nucleosome.
3. **(c)** Separation of DNA fragments according to their size
   Explanation: Gel electrophoresis is used to separate macromolecules like DNA, RNA and proteins. DNA fragments are separated according to their size. Proteins can be separated according to their size and their charge (different proteins have different charges).
   This is an important tool to study the genome of an individual.
4. **(c)** Disease-associated sequences and tracing human history
   Explanation: Scientists have identified about 1.4 million locations where single base DNA differences (SNPs) occur in human. This information is helpful in finding chromosomal locations for disease-associated sequences and human history.
5. **(a)** All of these
   Explanation: There are three types of RNA - mRNA, tRNA, and rRNA. mRNA carries information from DNA to proteins. tRNA acts as an adapter molecule and carries amino acids during translation. rRNA has catalytic properties and it is a part of the ribosome while catalyzing the process of translation.
6. **(a)** WBCs, hair root cells, and body secretion
   Explanation: DNA fingerprinting is a method used to identify an individual from a sample of DNA by looking at unique patterns in their DNA.
   DNA is extracted from a biological sample. STR analysis is incredibly sensitive so it only needs a tiny amount of someone's DNA to produce an accurate result. As a result, the DNA can be extracted from a wider range of biological samples, including blood, saliva and hair and body secretion, etc.
7. **(d)** Cistron
   Explanation: In biochemical genetics, the term gene is being replaced by cistron. Cistron is a segment of DNA consisting of a stretch of deoxyribonucleotides which code for a biochemical controlling another cistron.
8. **(b)** pentoses
   Explanation: A nucleotide has three components – a nitrogenous base, a pentose sugar (ribose in case of RNA, and deoxyribose for DNA), and a phosphate group.
9. **(b)** Forensic science
   Explanation:
   - Satellite DNA consists of very large arrays of tandemly repeating, non-coding DNA. Satellite DNA is the main component of functional centromeres, and form the main structural constituent of heterochromatin.
   - It is a useful tool in forensic science as the density of DNA differs in from each other. It is used to identify the individuals form the other.
10. **(a)** t-RNA
    Explanation: During transcription of m-RNA, removal of RNA polymerase III from the nucleoplasm will affect the synthesis of t-RNA. The t-RNA transfers the amino acids to the site of translation to form the protein.
11. **(a)** They can act both as activators and as repressors.
    Explanation: The RNA polymerase is only capable of catalyzing the process of elongation. It associates

transiently with initiation-factor (σ) and termination-factor (ρ) to initiate and terminate the transcription, respectively. The initiation factor and the termination factor are regulatory proteins.

12. **(a)** The smaller ribosomal sub-unit
Explanation: When the small subunit encounters an mRNA, the process of translation of the mRNA to protein begins.

13. **(b)** Diagnose, treat, and prevents thousands of disorder that affect human beings.
Explanation: The Human Genome Project (HGP) is an international thirteen-year project that began on October 1990. It is important because it uses information from DNA to develop new ways to diagnose, treat, cure, or even prevent the thousands of diseases that afflict humankind.

14. **(c)** 5' - A U G A A U G - 3'
Explanation: The base sequence of a coding strand of DNA molecule in a transcription unit and mRNA molecule is always the same just thymine is replaced by uracil in mRNA.

15. **(a)** B and D
Explanation: In lac operon, Francois Jacob and Jacque Mono elucidated that in absence of lactose the repressor binds with the operator gene and forms the particular protein to express itself.

16. **(b)** exons appear but introns do not appear in the mature RNA.
Explanation: The primary transcribed RNA contains both the exons and the introns and is non-functional. Hence, it is subjected to a process called splicing where the introns are removed and exons are joined in a defined order. hnRNA undergoes additional processing called as capping and tailing. In capping an unusual nucleotide (methyl guanosine triphosphate) is added to the 5'-end of hnRNA. In tailing, adenylate residues (200-300) are added at 3'-end in a template-independent manner. It is the fully processed hnRNA, now called mRNA, that is transported out of the nucleus for translation.

17. **(c)** 3
Explanation: In DNA molecules nitrogenous base of complementary strands binds with hydrogen bonds. In cytosine and guanine there are 3 hydrogen bonds and in adenine and thymine, the number of hydrogen bond is 2.

18. **(c)** Polymerase chain reaction
Explanation: Polymerase chain reaction (PCR) is a wonderful technology for amplifying DNA. It allows you to take a specific region of DNA on the chromosome and through the use of primers, copy back and forth, only a particular desired segment, making two, then four, then eight, then sixteen, and so on, up to millions of copies.
It is possible to start from the DNA segment of a single cell and produce enough of it for use in DNA typing or fingerprinting.

19. **(b)** Chromosome 1 and Y
Explanation: Chromosome 1 has most genes (2968), and the Y has the fewest (231).

20. **(b)** Alec Jefferys
Explanation: Sir Alec John Jeffreys, CH FRS (born 9 January 1950 in Oxford, Oxfordshire, England) is a British geneticist, who developed techniques for DNA fingerprinting and DNA profiling which is now used worldwide in forensic science to assist police detective work and to resolve paternity and immigration disputes.
He is a professor of genetics at the University of Leicester, and he became an honorary freeman of the City of Leicester on 26 November 1992.
In 1994, he was knighted for services to genetics.

21. **(b)** 5' (upstream) end and 3' (downstream) end, respectively of the transcription unit
Explanation: Although promotor and terminator genes are present on template strand which confer that promoter gene is present at 3' end and terminator gene is present at 5' end. But all the notation during transcription are made with respect to the coding strand and hence it is said that the promotor gene is present at 5' end and terminator gene is present at 3' end.

22. **(b)** Switching ON and OFF of the operon
Explanation: In lac operon, lactose is the substrate for enzyme beta-galactocidase and it regulates switching ON and OFF of the operon. Hence, lactose is called the inducer.

23. **(c)** make every individual unique in phenotypic appearance.
Explanation: Genome variations are differences in the sequence of DNA from one person to the next.
In human's 99.9% of the base sequences of DNA are same and are referred to as **Bulk genomic DNA.**
The difference lies in the remaining 0.1%. It is these differences which make every individual unique in their phenotypic appearance. This DNA has small stretches of **repetitive sequences**. They are referred as Repetitive DNA.

24. **(d)** uniform width throughout DNA
Explanation: The bases in two strands are paired through hydrogen bond (H-bonds) forming base pairs (bp). Adenine forms two hydrogen bonds with Thymine from the opposite strand and vice-versa. Similarly, Guanine is bonded with Cytosine with three H-bonds. As a result, always a purine comes opposite to a pyrimidine. This generates approximately uniform distance between the two strands of the helix.

25. **(a)** Splicing
Explanation: The mRNA produced by transcription of DNA consists of exons and introns. The removal of introns and joining of exons to obtain mature mRNA is called splicing. It is followed by capping and tailing.

26. **(a)** AGU
Explanation: The codon for anticodon UCA on t-RNA is AGU. U bonds with A and G bonds with U in RNA. t-RNA carries specific amino acids to form protein molecules.

27. **(b)** Released polypeptide chain
Explanation: The figure shown above represents the translation process in which protein is produced. Ribosome provides the site for protein synthesis and t-RNA brings the amino acids. The 'x' is the polypeptide chain produced.

28. **(d)** Polymerase chain reaction (PCR) by amplification process
Explanation: Amplification is a mechanism leading to multiple copies of a chromosomal region within a chromosome arm.
The DNA amplification technique of the polymerase chain reaction (PCR) is a laboratory method for creating multiple copies of small segments of DNA.

29. **(d)** phosphate group
Explanation: A nitrogenous base is linked to the OH of 1' C pentose sugar through an N-glycosidic linkage to form a nucleoside, such as adenosine or deoxyadenosine, guanosine or deoxyguanosine, cytidine or deoxycytidine, and uridine or deoxythymidine.
When a phosphate group is linked to OH of 5' C of a nucleoside through phosphoester linkage, a corresponding nucleotide (or deoxynucleotide depending upon the type of sugar present) is formed.

30. **(c)** U.S.Department of energy and National institute of health
Explanation: The Human Genome Project was a 13-year-long, publicly funded project initiated in 1990 with the objective of determining the DNA sequence of the entire euchromatic human genome within 15 years.
It was co-ordinated by U. S. Department of Energy and the National Institute of health.
At any given time, approximately 200 labs in the United States were funded by either the National Institutes of Health or the U.S. Department of Energy to support these efforts.
Later on, the Welcome trust of the U.K becomes the major partner of this project.

31. **(a)** Both assertion and reason are correct
Explanation: An operon is a cluster of coordinately regulated genes. It includes structural genes (generally encoding enzymes), regulatory genes (encoding, e.g. activators or repressors), and regulatory sites (such as promoters and operators).
The type of control is defined by the response of the operon when no regulatory protein is present.
The inducer–repressor control of the lac operon is an example of **negative control**, in which expression is normally blocked.
In contrast, the CAP-cAMP system is an example of **positive control**, because the expression of the lac operon requires the presence of an activating signal.

32. **(a)** Both assertion and reason are correct
Explanation: DNA sequencing is the process of determining the precise order of nucleotides within a DNA molecule. It includes any method or technology that is used to determine the order of the four bases—

adenine, guanine, cytosine, and thymine- in a strand of DNA.
Genetic map up of an organism or individual lies in the DNA sequence. If two individual differs, then their DNA sequence should also be different.

33. **(a)** True
Explanation: True

34. **(a)** True
Explanation: True

35. 1. 200
36. 1. Pyrimidine
37. 1. Erwin Chargaff
38. 1. Heterochromatin
39. 1. Purines
40. 1. N-glycosidic

Solution

Class 12 - Computer Science

Computer Science

1. **(b)**

   National Science Foundation Network

   Explanation: ---

2. **(a)**

   Taking print of a file using pen drive

   Explanation: -

3. **(a)** A passenger book flight ticket thru airline site
   Explanation: ---

4. **(c)**

   Packet Switching Method

   Explanation: --

5. **(a)** All of these
   Explanation: --

6. **(a)**

   Fiber

   Explanation: --

7. **(b)**

   Ethernet Card

   Explanation: -

8. **(d)**

   WAN

   Explanation: -

9. **(a)** PAN
   Explanation: --

10. **(d)**

    Repeater

    Explanation: --

11. **(d)**

    Switch

    Explanation: --

12. **(b)**

    Wifi Card

    Explanation: -

13. **(a)** Ring
    Explanation: -

14. **(a)** All of the mentioned
    Explanation: -

15. **(b)** Topology
    Explanation: -

16. **(c)** Agreements on how communication components and DTE's are to communicate

    Explanation: -

17. **(d)**

WAN

Explanation: ----

18. **(b)**

a vast collection of different networks

Explanation: -

19. **(c)**

PAN

Explanation: -

20. **(a)**

Wireless LAN

Explanation: --

21. **(a)**

HTTP

Explanation: -

22. **(c)**

Domain Name System

Explanation: --

23. **(c)**

A case of traffic overloading

Explanation: -

24. **(d)**

Transmission capacity of a communication channels

Explanation: -

25. **(c)** A system designed to prevent unauthorized access
Explanation: -

26. **(d)**

sent from user and stored in the server while a user is browsing a website

Explanation: -

27. **(c)**

uniform resource locator

Explanation: -

28. **(a)**

generates on demand by a program or a request from browser

Explanation: -

29. **(b)**

it enables user to access the resources of internet

Explanation: -

30. **(b)** Transfer files from client to server without third party intervene
Explanation: -

31. **(c)**

Samsung

Explanation: -

32. **(a)**

TLS

Explanation: -

33. **(b)**

POP

Explanation: -

34. **(a)**

Dedicated Hosting

Explanation: -

35. **(c)**

Organization

Explanation: -

36. **(b)**

XML

Explanation: -

37. **(d)**

All

Explanation: -

38. **(d)**

Worm

Explanation: -

39. COOKIES **(d)**

Explanation: -

40. **(d)**

Graphic card

Explanation: -

Solution

Class 12 - Physical Education

Online Multiple Choice Question September-2020

1. **(a)** Impairment of Brain
   Explanation: Impairment of Brain
2. **(c)** Helping without giving Identity
   Explanation: Helping without giving identity
3. **(a)** All the above
   Explanation: all the above
4. **(a)** Calmness
   Explanation: calmness
5. **(c)** OCD
   Explanation: OCD
6. **(d)** Peer Group
   Explanation: Peer Group
7. **(a)** Fun Games
   Explanation: Fungames
8. **(a)** 7-12 yrs.
   Explanation: 7-12 yrs
9. **(c)** Wrong sitting posture
   Explanation: Wrong sitting posture
10. **(d)** Disability
    Explanation: Disability
11. **(b)** Creating special classrooms
    Explanation: Creating special classrooms
12. **(b)** ADHD
    Explanation: ADHD
13. **(a)** Having only one leg
    Explanation: Having only one leg
14. **(d)** Cognitive disability
    Explanation: Cognitive disability
15. **(c)** ADHD
    Explanation: ADHD
16. **(c)** Attention deficit hyperactivity disorder
    Explanation: Attention deficit hyperactivity disorder
17. **(a)** ASD
    Explanation: ASD
18. **(a)** Sensory processing Disorder
    Explanation: Sensory processing Disorder
19. **(d)** ODD
    Explanation: ODD
20. **(c)** Oppositional defiant disorder
    Explanation: Oppositional defiant disorder
21. **(d)** OCD
    Explanation: OCD

22. **(d)** Flat foot
Explanation: Flat foot

23. **(d)** Bones & muscles
Explanation: Bones & muscles

24. **(d)** Kyphosis
Explanation: Kyphosis

25. **(c)** Adulthood
Explanation: Adulthood

26. **(d)** Knock Knee
Explanation: Knock Knee

27. **(d)** Gross motor development
Explanation: Gross motor development

28. **(b)** Scientific Score
Explanation: Instrument

29. **(a)** Fine motor development
Explanation: Fine motor development

30. **(b)** Krous-Weber Test
Explanation: Krous-Weber Test

31. **(b)** Six Minute Walk Test
Explanation: Six Minute Walk Test

32. **(c)** 2001
Explanation: 2001

33. **(c)** Weight/Height
Explanation: Weight/Height

34. **(c)** 50 m standing start
Explanation: 50 m standing start

35. **(d)** Kraus Weber Test
Explanation: Kraus Weber Test

36. **(a)** 20 $\times$ 5 yards
Explanation: 20 x 5 yards

37. **(b)** 8 lbs
Explanation: 8 lbs

38. **(c)** Rockport Test
Explanation: Rockport Test

39. **(a)** Walking speed, Coordination and agility
Explanation: Walking speed, Coordination and agility

40. **(a)** Shoulder Flexibility
Explanation: Shoulder Flexibility