

OSSTET

Previous Year Paper

(Science - PCM) Paper-I
16 Jan, 2023

A - SECTION - I
ODIA (COMPULSORY)

ପ୍ରଦତ୍ତ ଅନୁଲେଖଟି ପାଠକରି ପଞ୍ଚ (ନଂ. 1 ରୁ 5 ପର୍ଯ୍ୟନ୍ତ) ଗୁଡ଼ିକର ଉତ୍ତର ଦାନ୍ତ :

ଅତୀତକାଳରେ ପ୍ରକୃତି ଲୋକରେ ଚଡ଼ି ମଣିଷ ତାହାର ଅନୁଭୂତି ଓ ଅନୁମାନ ବଳରେ ଯେତେବେଳେ ବୁଝିପାରିଲା ସେଗୁଡ଼ିକୁ ବିଶ୍ଳେଷଣ କରି ନିୟମଗୁଡ଼ିଏ ତିଆରି କରିଥିଲା । ସେଥିରୁ ଅଧିକାଂଶ ସୂର୍ଯ୍ୟ ଓ ଚନ୍ଦ୍ରଙ୍କ ଚଳି ଓ ଅବସ୍ଥାନକୁ ଜେନ୍ତୁ କରିଥିଲା । ଦିନ ଓ ରାତି, ଋତୁ ପରିବର୍ତ୍ତନ ସଂପର୍କିତ ପ୍ରାକୃତିକ ନିୟମଗୁଡ଼ିକ ଏହି ଧରଣର ଉଦାହରଣ । ମଣିଷ ବିଶ୍ୱାସ କରୁଥିଲା ଯେ ଈଶ୍ୱର ସ୍ୱର୍ଗରେ ଅଛନ୍ତି ଓ ତାଙ୍କରି ହିଁ ସୃଷ୍ଟି ପ୍ରକୃତିର ଏହି ନିୟମଗୁଡ଼ିକ ଅପରିବର୍ତ୍ତନୀୟ ସତ୍ୟ ଉଦାହରଣ । ଆଗେ ଜୀବନ ଧାରଣର ଶୈଳୀ ସରଳ ଥିଲା । ବିଜ୍ଞାନର ଯୁଗ ଆସିବା ପରେ ନିଉଟନ ପ୍ରକୃତିର ଆହୁରି କେତେକ ଗୁଡ଼ି ନିୟମ ଆବିଷ୍କାର କଲେ, ଯେଉଁଗୁଡ଼ିକ ଜାଣିବା ପରେ ପରିବାର ଓ ସମାଜରେ ଚଳିବା ଆହୁରି ସହଜ ହେଲା । ସେଥିରୁ ଦୁଇଟି ହେଲା ଜଡ଼ତାର ନିୟମ ଓ କ୍ରିୟା ପ୍ରତିକ୍ରିୟା ନିୟମ ଯାହାକୁ ସେମାନେ ଦୈନନ୍ଦିନ ଜୀବନରେ ଅନୁଭବ କରୁଥିବାରୁ ସହଜରେ ବୁଝିପାରିଲେ । ଜଡ଼ତାର ନିୟମ ହେଲା ବଳ ହିଁ ବସ୍ତୁକୁ ଗତି ଦେଇଥାଏ କିମ୍ବା ସେଥିରେ ପରିବର୍ତ୍ତନ ଆଣିଥାଏ । ତାଙ୍କର ସର୍ବାପେକ୍ଷା ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ନିୟମଟି ଥିଲା ଦୁଇଟି ବସ୍ତୁର ପାରସ୍ପରିକ ଆକର୍ଷଣର ନିୟମ, ଯାହା ପୃଥିବୀର ବସ୍ତୁଗୁଡ଼ିକ ଛଡ଼ା ଆକାଶୀୟ ଚିତ୍ର ସୂର୍ଯ୍ୟ ଓ ଚନ୍ଦ୍ରଙ୍କ ଗତିପଥ ନିର୍ଦ୍ଧାରଣ କ୍ଷେତ୍ରରେ ମଧ୍ୟ ପ୍ରୟୋଗ କରାଗଲା । ଏହା ଆଗରୁ ସଂସାରର ଅଗ୍ରଗତି କେବଳ କେତେକ ତାତ୍ତ୍ୱିକ ଚିନ୍ତା ଓ ଧାର୍ମିକ ଭାବନା ବଳରେ ପ୍ରଣୀତ ନୀତିଗୁଡ଼ିକ ମାଧ୍ୟମରେ ପଚୁଛି ବୋଲି ମନେ କରାଯାଉଥିଲା । ବୈଜ୍ଞାନିକମାନ ଏହି ନିୟମଗୁଡ଼ିକ, ସେହି ଅଗ୍ରଗତିର ବିଶ୍ୱାସ ଓ ଯୋଗ୍ୟତାକୁ ଯୁକ୍ତି ଦ୍ୱାରା ଦର୍ଶାଇଲେ କିମ୍ବା ଖଣ୍ଡନ କଲେ ।

1. କାହାକୁ ପ୍ରାକୃତିକ ନିୟମଗୁଡ଼ିକର ସ୍ରଷ୍ଟା ଭାବେ ପୂର୍ବେ ବିଶ୍ୱାସ କରାଯାଉଥିଲା ?
(A) ମନୁସ୍ୟକୁ
(B) ସୂର୍ଯ୍ୟଚନ୍ଦ୍ରଙ୍କୁ
(C) ଈଶ୍ୱରଙ୍କୁ
(D) ବୈଜ୍ଞାନିକଙ୍କୁ

2. ଅତୀତ କାଳରେ ମଣିଷ ତିଆରି କରିଥିବା ନିୟମର ଭିତ୍ତି କ'ଣ ଥିଲା ?
(A) ସାମାଜିକ ବିଶ୍ୱାସ
(B) ଅନୁଭୂତି ଓ ଅନୁମାନ
(C) ଧାର୍ମିକ ଭାବନା
(D) ତାତ୍ତ୍ୱିକ ଚିନ୍ତା
3. ନିଉଟନ୍ଙ୍କ ସର୍ବାପେକ୍ଷା ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ନିୟମଟି କ'ଣ ?
(A) ଦୁଇଟି ବସ୍ତୁର ପାରସ୍ପରିକ ଆକର୍ଷଣର ନିୟମ
(B) ଦିନ ଓ ରାତି ସମ୍ପର୍କୀୟ ନିୟମ
(C) ଋତୁ ପରିବର୍ତ୍ତନ ସମ୍ପର୍କୀୟ ନିୟମ
(D) ଜଡ଼ତାର ନିୟମ
4. ବସ୍ତୁକୁ କିଏ ଗତି ଦେଇଥାଏ ?
(A) ଈଶ୍ୱର
(B) ଚନ୍ଦ୍ରସୂର୍ଯ୍ୟ
(C) ମଣିଷ
(D) ବଳ
5. ନିଉଟନ୍ଙ୍କ ପୂର୍ବରୁ ସଂସାରର ଅଗ୍ରଗତି ସମ୍ପର୍କରେ ପ୍ରଣୀତ ନୀତିଗୁଡ଼ିକର ଆଧାର କ'ଣ ଥିଲା ?
(A) ତାତ୍ତ୍ୱିକ ଚିନ୍ତା ଓ ଧାର୍ମିକ ଭାବନା
(B) ଈଶ୍ୱର ବିଶ୍ୱାସ
(C) ଚନ୍ଦ୍ର ସୂର୍ଯ୍ୟଙ୍କ ଗତିପଥ
(D) ପ୍ରାକୃତିକ ନିୟମ

6. 'ନରସିଂହ' - ଏହା କେଉଁ ପ୍ରକାର ସମାସ ନିଷ୍କଳ ପଦ ?
 (A) ବୃଦ୍ଧକ କର୍ମଧାରୟ
 (B) ଉପମାନ କର୍ମଧାରୟ
 (C) ଉପମିତ କର୍ମଧାରୟ
 (D) ମଧ୍ୟପଦଲୋପୀ କର୍ମଧାରୟ
7. "ତାରା ପୁଞ୍ଜେ ଯଥା ଶୋଭେ ହରିତାଳୀ,
 ପୁଲିନ ତେସନ ଶୁଭ୍ର - ଶକ୍ତିଶାଳୀ ।" - ଏଥିରେ କେଉଁ
 ଅଳଙ୍କାର ରହିଛି ?
 (A) ଅନୁସ୍ରାସ
 (B) ଉତ୍ପ୍ରେକ୍ଷା
 (C) ଯମକ
 (D) ଉପମା
8. ସେ କେବଳ ବିଦ୍ଵାନ ନୁହଁନ୍ତି, ଦୟାଳୁ ମଧ୍ୟ । - ଏହା କେଉଁ
 ପ୍ରକାର ବାକ୍ୟ ?
 (A) ସରଳ
 (B) ଯୌଗିକ
 (C) ଜଟିଳ
 (D) ମିଶ୍ର
9. 'ପାଲିଙ୍କି ଉପରେ ପାଟେଇତା' ରୁଡ଼ିଟି କେଉଁ ଅର୍ଥରେ
 ପ୍ରଚଳିତ ?
 (A) ବିଖ୍ୟାତ ହେବା
 (B) ଉନ୍ନତି ଉପରେ ଉନ୍ନତି
 (C) ଉଚ୍ଚୀ ଦେଖାଇବା
 (D) ଶିହରଣ ଖେଳିଯିବା
10. 'ତ' କୃତପ୍ରତ୍ୟୟ ଦ୍ଵାରା ଗଠିତ ଶବ୍ଦଟିକୁ ଚିହ୍ନଟ ।
 (A) କ୍ରୋଧ
 (B) ରୋଧ
 (C) ଷୋଡ଼
 (D) ବୃଦ୍ଧ
11. କେଉଁ ଶବ୍ଦରେ 'ଶବ୍ଦ' ବିଧି ନିୟମର ବ୍ୟତିକ୍ରମ ଘଟିଛି ?
 (A) ଜଣାଣ
 (B) ପାଷାଣ
 (C) ପ୍ରମାଣ
 (D) ଶ୍ରବଣ
12. 'ଅର୍ଥକୁ ଅତିକ୍ରମ ନ କରି' - ସମସ୍ତ ପଦଟି କ'ଣ ହେବ ?
 (A) ସମର୍ଥ
 (B) ଯଥାର୍ଥ
 (C) ଅନର୍ଥ
 (D) ଅବ୍ୟର୍ଥ
13. ଶୁଦ୍ଧ ଶବ୍ଦଟିକୁ ବାଛ :
 (A) ମରୁଦ୍ୟାନ
 (B) ମିନତୀ
 (C) ସର୍ବାଙ୍ଗୀଣ
 (D) ଆନୁସଙ୍ଗିକ

14. 'କୌତୁକ' ଶବ୍ଦଟି କେଉଁ ଉଚ୍ଚିତ ପ୍ରତ୍ୟୟ ଦ୍ୱାରା ଗଠିତ ?

- (A) ଅ
- (B) କ
- (C) ଉକ
- (D) ଅକ

15. ଲୋକମାନେ ମାଛ ଧରୁଛନ୍ତି । - ରେଖାଙ୍କିତ ପଦଟି କେଉଁ ବିଭକ୍ତି ?

- (A) ପ୍ରଥମା
- (B) ଚତୁର୍ଥୀ
- (C) ତୃତୀୟା
- (D) ଦ୍ୱିତୀୟା

16. ସର୍ବେ ହୋଇଣ ଏକ ମୁଖ, ତାକିଲେ ନାରାୟଣ ରଖ ।
ରେଖାଙ୍କିତ ଅଂଶଟି କେଉଁ ପଦ ?

- (A) ଅବ୍ୟୟ
- (B) ବିଶେଷ୍ୟ
- (C) ସର୍ବନାମ
- (D) ବିଶେଷଣ

17. 'କୁଆ ଛୁଆ ଉଡ଼ିଯିବା' ଗୁଡ଼ିଚିର ଅର୍ଥ କ'ଣ ?

- (A) ଗୁପ୍ତକଥା ପଦାରେ ପଡ଼ିବା
- (B) କଥାକୁ ବଢ଼େଇ କହିବା
- (C) ଅସମ୍ଭବ କଥା ଘଟିବା
- (D) ନିର୍ମମ ମାଡ଼ ହେବା

18. ଶୁଦ୍ଧ ବାକ୍ୟଟିକୁ ଚିହ୍ନାଅ :

- (A) ଶୀତଋତୁରେ ବହୁ ଦର୍ଶନୀୟ ଜ୍ଞାନଗୁଡ଼ିକରେ ଅନେକ ଲୋକମାନଙ୍କର ସମାଗମ ହୋଇଥାଏ
- (B) ବର୍ତ୍ତମାନ ଦରିଦ୍ରତା ଦୂରୀକରଣ ପାଇଁ ବହୁ ଯୋଜନା କରାଯାଉଛି
- (C) ଅପୁତ୍ରିକମାନଙ୍କର ଆତ୍ମା ନର୍କଗାମୀ ହୋଇଥାଏ
- (D) ସମ୍ଭାବପତ୍ର ନେତାଙ୍କର ବିବୃତ୍ତି ପ୍ରକାଶିତ କରିଥିଲା

19. "ଶ୍ୱେତାଙ୍ଗ ଚଢ଼ାଇଗୁହା ସମୁଦ୍ରଗତ,

ନୀର ଭେଦି କିବା ଉଠେ ଐରାବତ ?" - ଏଥିରେ କେଉଁ ଅଳଙ୍କାର ରହିଛି ?

- (A) ଉପମା
- (B) ରୂପକ
- (C) ଉତ୍ପ୍ରେକ୍ଷା
- (D) ଶ୍ଳେଷ

20. ଶୋଇଲା ପୁଅର ଭାଗ ନାହିଁ । - ରେଖାଙ୍କିତ ଅଂଶଟି କେଉଁ ପଦ ?

- (A) କ୍ରିୟା
- (B) ବିଶେଷଣ
- (C) ବିଶେଷ୍ୟ
- (D) ସର୍ବନାମ

A - SECTION - II
ENGLISH (COMPULSORY)

21. Neither you, nor I, nor anyone else _____ the answer.
- (A) know
(B) knows
(C) have known
(D) knowing
22. If he had asked me, _____ him.
- (A) I would help
(B) I shall have helped
(C) I would have helped
(D) I will help
23. Which of the following imperative sentences expresses 'advice' ?
- (A) Please have another cup of tea.
(B) March on, soldiers.
(C) Have a smooth journey.
(D) Respect your elders.
24. Which letter is silent in the word 'solemn' ?
- (A) m
(B) n
(C) s
(D) l
25. We shall have to call the party _____ if it rains.
- (A) on
(B) out
(C) off
(D) up
26. Which of the following is a grammatically acceptable sentence ?
- (A) Sreyan scored a goal in the last minute who was fortunate
(B) Sreyan who scored a goal in the last minute was fortunate
(C) Sreyan, who scored a goal in the last minute, was fortunate
(D) Sreyan, that scored a goal in the last minute was fortunate
27. Our Headmaster taught us grammar. Which of the following sentences is the correct passive voice of the above sentence ?
- (A) We are taught grammar by our Headmaster.
(B) We were taught grammar by our Headmaster.
(C) Grammar is taught us by our Headmaster.
(D) We were being taught grammar by our Headmaster.

28. The teacher said, "The earth moves round the sun." Pick out the sentence which correctly changes the above sentence into indirect speech.
- (A) The teacher told that the earth moves round the sun.
- (B) The teacher said that the earth had moved the sun.
- (C) The teacher told that the earth moved round the sun.
- (D) The teacher said that the earth moves round the sun.
29. How often _____ to the theatre when you were in France ?
- (A) did you go
- (B) were you going
- (C) have you been
- (D) do you go
30. Which of the following is a meaningful word ?
- (A) hurricane
- (B) herricane
- (C) hurrecane
- (D) herrecane

Read the passage given below and answer the questions that follow choosing the correct alternatives given.

The white tiger is one of the rarest wild animals not only in India but perhaps in the world. In fact, all the white tigers found in India and abroad are the descendants of a nine-month-old white cub that was captured in 1951 in the forest of Rewa in Madhya Pradesh. At present there are about 38 white tigers in the world, out of which 24 are in India.

The white tiger is a magnificent animal. It has a snow - white coat with brown or ash coloured stripes and is larger than a normal tiger. About 70 years ago it was reported that there were light coloured tigers in the forests of Assam, Bengal and Bihar, but they were not truly white tigers. The forests of Rewa are the only region where real white tigers are found.

Questions :

31. What kind of stripes do the white tigers have ?
- (A) white - coloured
- (B) brown - coloured
- (C) red - coloured
- (D) purple - coloured
32. In which state was the nine-month-old white cub found ?
- (A) Bihar
- (B) West Bengal
- (C) Assam
- (D) Madhya Pradesh
33. How does the writer describe the white tiger ?
- (A) as harmful
- (B) as ferocious
- (C) as magnificent
- (D) as lovable

34. What is the antonym of the word 'normal' ?

- (A) unnormal
- (B) abnormal
- (C) innormal
- (D) usual

35. The white tiger is regarded as one of the _____ wild animals in India.

- (A) most unusual
- (B) fiercest
- (C) most common
- (D) most familiar

Read the poem given below and answer the questions that follow choosing the correct alternatives.

Loveliest of trees, the cherry now
Is hung with bloom along the bough,
And stands about the woodland ride
Wearing white for Eastertide.

Now of my threescore years and ten,
Twenty will not come again,
And take from seventy springs a score,
It only leaves fifty more.

And since to look at things in bloom
Fifty springs are little room,
About the woodlands I will go
To see the cherry hung with snow.

Questions :

36. How many years, according to the poet, is he left with to look at things in bloom ?

- (A) twenty
- (B) threescore and ten
- (C) fifty
- (D) sixty

37. Why does the poet wish to go about the woodlands ?

- (A) to see the cherry tree laden with snow
- (B) to see the cherry tree hung with white flowers
- (C) to collect the blossoms from the cherry tree
- (D) to see the snow on the cherry flowers

38. Where does the cherry tree stand ?

- (A) in the garden
- (B) about the woodland path
- (C) on the premises of a church
- (D) on the bank of a river

39. The first stanza describes the _____ of the cherry tree.

- (A) leaves
- (B) roots
- (C) fruits
- (D) blossoms

40. The word 'room' in the line "Fifty springs are little room" means _____.

- (A) part of a house enclosed by walls
- (B) space that is enough for an occasion
- (C) space of time
- (D) enough empty space in a place

B - SECTION - III**SCIENCE (PCM)****PHYSICS**

41. A train accelerates from 18 km/h to 72 km/h in 10 sec. What is the distance travelled by train ?
- (A) 355 m
(B) 325 m
(C) 125 m
(D) 255 m
42. In which medium sound wave cannot pass through ?
- (A) solid
(B) vacuum
(C) ideal gas
(D) liquid
43. The pitch of a sound wave depends upon which one of its following characteristics ?
- (A) speed
(B) loudness
(C) amplitude
(D) frequency
44. A pendulum is oscillating freely. Its bob has :
- (A) Only kinetic energy
(B) Maximum kinetic energy at extreme position
(C) Maximum potential energy at its mean position
(D) A constant energy which is the sum of potential and kinetic energy
45. Mass of an object on earth is 12 kg. What is its weight on moon ?
- (A) 19.6 N
(B) 12 N
(C) 24.4 N
(D) 14.8 N
46. Express the SI unit of power in terms of mass, length and time :
- (A) $\text{kg m}^2 \text{s}^{-3}$
(B) kg m s^{-3}
(C) $\text{kg}^2 \text{m}^2 \text{s}^{-2}$
(D) kg m s^{-2}

47. A piece of ice is floating on water in a container. What will happen to the surface of water when whole ice piece melts ?
- (A) will go up
(B) will not change
(C) will go down
(D) none of these
48. A few substances are grouped in increasing order of their particle's 'forces of attraction'. Which of the following is the correct order ?
- (A) Water, oxygen, chalk
(B) Salt, juice, wind
(C) Nitrogen, water, sugar
(D) Air, salt, oil
49. Weightlessness is experienced by objects inside an artificial satellite. Even though the moon is a natural satellite of the earth, we do not experience weightlessness on the moon. This is because :
- (A) there is no gravity on moon
(B) our mass is changed on moon
(C) mass of moon is considerably large
(D) all of the above
50. Two thin lenses are put close to each other. The focal length of this combination is :
- (A) less than the smaller focal length among the two lenses
(B) more than the bigger focal length among the two lenses
(C) equal to the arithmetical average of the two focal lengths
(D) equal to the geometrical average of the two focal lengths
51. Which of the following mirror is used by a Dentist to examine a small cavity ?
- (A) Convex mirror
(B) Plane mirror
(C) Concave mirror
(D) Combination of convex and concave mirror
52. The force between two charges is 200 N. If the distance between the charges is doubled, the force will be _____.
- (A) 400 N
(B) 100 N
(C) 50 N
(D) 200 N

53. A patient of hypermetropia is given spectacles of :
(A) concave lens
(B) convex lens
(C) compound lens
(D) lens of zero capacity
54. Dancing of small pieces of camphor on the surface of water is due to :
(A) Viscosity
(B) Surface tension
(C) Weight
(D) Lifting force
55. To store a large amount of charge at relatively low Voltage, we use :
(A) ceramic capacitors
(B) fixed capacitors
(C) parallel plate capacitors
(D) electrolytic capacitors
56. A device used for converting AC into DC is called _____.
(A) Transformer
(B) Rectifier
(C) Induction coil
(D) Dynamo
57. The shape of the magnetic field lines produced by a current carrying conductor are :
(A) straight lines
(B) concentric circles
(C) concentric ellipse
(D) concentric parabolas
58. In a circuit, four resistors each of $12\ \Omega$ are Connected in parallel to a 12 volt battery. What is the equivalent resistance of the circuit ?
(A) $48\ \Omega$
(B) $24\ \Omega$
(C) $3\ \Omega$
(D) $6\ \Omega$
59. Weber per square meter is called _____.
(A) henry
(B) ampere
(C) tesla
(D) ohm
60. If we apply law of conversion of energy to electromagnetic induction, electrical energy induced in a conductor comes from _____.
(A) Potential energy
(B) Heat energy
(C) Kinetic energy
(D) Radiation energy

B - SECTION - III
SCIENCE (PCM)
CHEMISTRY

61. Surface Tension of a liquid is due to :
- (A) Gravitational force between molecules
 - (B) Electrical force between molecules
 - (C) Adhesive force between molecules
 - (D) Cohesive force between molecules
62. Which one of the following oxides reacts with both acid and base ?
- (A) Aluminium Oxide
 - (B) Calcium Oxide
 - (C) Sodium Oxide
 - (D) Potassium Oxide
63. The neutralization reaction between an acid and a base is a type of :
- (A) Double displacement reaction
 - (B) Displacement reaction
 - (C) Addition reaction
 - (D) Decomposition reaction
64. What is the name of the graph that is drawn, when the temperature is kept constant ?
- (A) Isotherm
 - (B) Isochoric and isobar
 - (C) Isochoric
 - (D) Isobar
65. What happens to the electropositive character of elements on moving from left to right in a periodic table ?
- (A) Increases
 - (B) Decreases
 - (C) First increases then decreases
 - (D) First decreases then increases
66. The element having tetra-atomic atomicity is _____.
- (A) Helium
 - (B) Nitrogen
 - (C) Phosphorus
 - (D) Chlorine
67. The elements with atomic numbers 35, 53 and 85 are _____.
- (A) noble gases
 - (B) halides
 - (C) alkaline
 - (D) halogens

68. Which of the following element will become stable after losing an electron ?
- (A) Helium
(B) Iodine
(C) Sodium
(D) Oxygen
69. Ionic compounds consist of _____ charge ions.
- (A) oppositely
(B) equally
(C) negatively
(D) positively
70. The electronic configuration of an element M is 2, 8, 4 in modern periodic table. The element is placed in which group ?
- (A) 4th group
(B) 2nd group
(C) 14th group
(D) 18th group
71. The homolytic fission of a covalent bond liberates :
- (A) Carbonium ions
(B) Carbonions
(C) Free radicals
(D) Carbenes
72. Which of the following substances is not an aromatic compound ?
- (A) Benzene
(B) Naphthalene
(C) Anthracene
(D) Hexene
73. Heating of Carbonate ores to remove carbon is called :
- (A) Roasting
(B) Calcination
(C) Smelting
(D) Fluxing

74. IUPAC name of $(\text{CH}_3)_2\text{CH}-\text{CH}=\text{CH}-\text{CH}_3$ is :
- (A) 2 methyl-3-pentene
(B) 4 methyl-2-pentene
(C) 2-isopropyl-1-propene
(D) 3-isopropyl-2-propene
75. The Conjugate acid of NH_2^- is :
- (A) NH_3
(B) NH_2OH
(C) NH_4^+
(D) N_2H_4
76. Which of the following elements occur freely in nature ?
- (A) Iodine
(B) Sulphur
(C) Phosphorus
(D) Magnesium
77. The cooking gas is mainly a mixture of the following two gases :
- (A) Methane and Ethane
(B) Ethane and Propane
(C) Propane and Butane
(D) Butane and Pentane
78. From the following which one is the example of chemical reaction ?
- (A) Grapes get fermented
(B) Breakdown of food
(C) Formation of curd
(D) All of the above
79. Reaction is said to be in equilibrium when :
- (A) the rate of transformation of reactants to products is equal to the rate of transformation of products to the reactants.
(B) 50% of the reactants are converted to products.
(C) the volume of the reactants is just equal to the volume of the products.
(D) the reaction is near completion and all the reactants are converted to products.
80. Which of the following are exothermic reactions ?
- (i) Reaction of water with quick lime
(ii) Dilution of an acid
(iii) Evaporation of water
(iv) Sublimation of Camphor (Crystals)
- (A) (i) and (ii)
(B) (ii) and (iii)
(C) (i) and (iv)
(D) (ii) and (iv)

B - SECTION - III
SCIENCE (PCM)
MATHEMATICS

81. If $A = \{1, 3, 5, 7, 9, 11, 13, 15, 17\}$, $B = \{2, 4, \dots, 18\}$ and N is the Universal Set, then $A' \cup ((A \cup B) \cap B')$ is :
- (A) A
 (B) N
 (C) B
 (D) None of these
82. What is the positive value of $\sqrt{\sqrt{8+2\sqrt{8+2\sqrt{8+2\sqrt{8}}}}}$?
- (A) 10
 (B) 6
 (C) 8
 (D) 4
83. Let $f: R \rightarrow R$, $g: R \rightarrow R$ be two functions given by $f(x) = 2x - 3$, $g(x) = x^3 + 5$, then $(f \circ g)^{-1}$ is :
- (A) $\left(\frac{x+7}{2}\right)^{\frac{1}{3}}$
 (B) $\left(x - \frac{7}{2}\right)^{\frac{1}{3}}$
 (C) $\left(\frac{x-2}{7}\right)^{\frac{1}{3}}$
 (D) $\left(\frac{x-7}{2}\right)^{\frac{1}{3}}$
84. If $p^3 - q^3 = (p-q)(p-q)^2 - xpq$, then find the value of x .
- (A) 1
 (B) -3
 (C) 3
 (D) -1
85. In the set $A = \{1, 2, 3, 4, 5\}$, a relation R is defined by $R = \{(x, y) | x, y \in A \text{ and } x < y\}$. Then R is :
- (A) Reflexive
 (B) Symmetric
 (C) Transitive
 (D) None of these
86. If the lines $ax + 2y + 1 = 0$, $bx + 3y + 1 = 0$, $cx + 4y + 1 = 0$ are concurrent, then a, b, c are in :
- (A) AP
 (B) GP
 (C) HP
 (D) None of these

87. The incentre of the triangle formed by the lines $x=0$, $y=0$ and $3x+4y=12$ is at :

- (A) $\left(\frac{1}{2}, \frac{1}{2}\right)$
- (B) $(1, 1)$
- (C) $\left(1, \frac{1}{2}\right)$
- (D) $\left(\frac{1}{2}, 1\right)$

88. The function

$y = x - \cot^{-1} x - \log(x + \sqrt{x^2 + 1})$ is increasing on :

- (A) $(-\infty, 0)$
- (B) $(0, \infty)$
- (C) $(-\infty, \infty)$
- (D) None of these

89. If A is a square matrix of order $n \times n$, then $\text{adj}(\text{adj } A)$ is equal to :

- (A) $|A|^n A$
- (B) $|A|^{n-1} A$
- (C) $|A|^{n-2} A$
- (D) $|A|^{n-3} A$

90. The value of $\tan\left(\cos^{-1} \frac{4}{5} + \tan^{-1} \frac{2}{3}\right)$ is :

- (A) $\frac{6}{17}$
- (B) $\frac{7}{16}$
- (C) $\frac{17}{6}$
- (D) None of these

91. The value of $\cos 1^\circ \cos 2^\circ \cos 3^\circ \dots \cos 179^\circ$ is :

- (A) $\frac{1}{\sqrt{2}}$
- (B) 0
- (C) 1
- (D) None of these

92. If the mean and variance of a binomial variate X are 2 and 3 respectively, then the probability that X takes a value greater than 1 is :

- (A) $\frac{2}{3}$
- (B) $\frac{4}{5}$
- (C) $\frac{7}{8}$
- (D) $\frac{15}{16}$

93. The sum upto n terms of the series

$$\frac{3}{1^2} + \frac{5}{1^2 + 2^2} + \frac{7}{1^2 + 2^2 + 3^2} + \dots \text{ is :}$$

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

(B) $\frac{9n}{n+1}$

(C) $\frac{12n}{n+1}$

(D) $\frac{3n}{n+1}$

94. How many bullets can be made out of a cube of lead, whose edge measure 22 cm, each

bullet being 2 cm in diameter ? $\left(\text{Use } \pi = \frac{22}{7} \right)$

(A) 2541

(B) 2514

(C) 2154

(D) None of these

95. The coefficient of x^n in the expansion of $\log_e(1+3x+2x^2)$ is :

(A) $(-1)^n \left(\frac{2^n + 1}{n} \right)$

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

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

(D) None of these

96. The value of $\lim_{x \rightarrow 0} \frac{\int_0^{x^2} \cos t^2 dt}{x \sin x}$ is :

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

(B) 1

(C) -1

(D) None of these

97. The variance of first n natural number is :

(A) $\frac{n^2 + 1}{12}$

(B) $\frac{n^2 - 1}{12}$

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

(D) None of these

98. The total number of generators of a finite cyclic group of order 10 is :

(A) 1

(B) 2

(C) 4

(D) None of these

99. The distance between the line

$$\vec{r} = 2\hat{i} - 2\hat{j} + 3\hat{k} + \lambda(\hat{i} - \hat{j} + 4\hat{k})$$

and the

plane $\vec{r} \cdot (\hat{i} + 5\hat{j} + \hat{k}) = 5$ is :

(A) $\frac{10}{3\sqrt{3}}$

(B) $\frac{10}{3}$

(C) $\frac{10}{9}$

(D) None of these

100. What is the volume of the largest right circular cone that can be fitted in a cube

whose edge is 14 cm ? (Use $\pi = \frac{22}{7}$).

(A) 618 cm^3

(B) 768.37 cm^3

(C) 718.67 cm^3

(D) None of these

C - SECTION - IV
CHILD DEVELOPMENT, PEDAGOGY,
SCHOOL MANAGEMENT & EVALUATION

101. A percentage based method for awarding grading is known as :

- (A) Absolute grading
- (B) Relative grading
- (C) Both (A) and (B)
- (D) Neither (A) nor (B)

102. What was Alfred Binet's Theory ?

- (A) Intelligence can be defined by the comparison of the performance of children at the same idea.
- (B) Gifted children should be identified early and have access to specially trained teachers.
- (C) People are not born with all of the intelligence they will ever have.
- (D) The differentiation of human intelligence into specific modalities of intelligence, rather than defining intelligence as a single, general ability.

103. In which of the following test, the word "Premises" is associated with :

- (A) Multiple choice questions
- (B) Alternate response questions
- (C) Matching form questions
- (D) Simple completion type question

104. National Staff College for Educational Planners and Administrators started in 1973 by Govt. of India is rechristened as _____ in 1979.

- (A) NCERT
- (B) NCTE
- (C) CABE
- (D) NIEPA

105. TLM should be used by teacher as it :

- (A) is not very expensive
- (B) motivates learners to further prepare such materials at home
- (C) supplements teaching learning process
- (D) prepares students mentally to sit in the class

106. Which of the following types of learning materials are in the form of real objects or ideals that make the concepts very clear ?

- (A) Visual material
- (B) Surrounding environment
- (C) ICT
- (D) Tactile material

107. Basic managerial functions of Human Resource Management are :

- (A) Planning, organising, staffing
- (B) Planning, organising and Co-ordinating
- (C) Planning, organising, directing and controlling
- (D) None of these

108. A more positive attitude of parents towards school can be derived from enriched _____.

- (A) Economic background
- (B) Cultural heritage
- (C) Customs and traditions
- (D) School-community partnership

109. Who said that intelligence in general was the power of good responses from the point of view of truth or fact ?

- (A) Thorndike
- (B) Termon
- (C) Peterson
- (D) Buckingham

110. According to whom each reinforcement builds up a reserve of responses ?

- (A) Hull
- (B) Gestalt
- (C) Tolman
- (D) Skinner

111. Scales having equal differences between successive categories refer to :

- (A) Ordinal scale
- (B) Nominal scale
- (C) Ratio scale
- (D) Interval scale

112. Which of the following statement is incorrect as refers to portfolio ?

- (A) Students get opportunity to exhibit their own talent
- (B) It makes learners more self reflective
- (C) Both teacher and student collaborate in evaluating on student progress
- (D) It is a tool that clearly indicates marking criteria

113. Audio-visual aids make learning :

- (A) easy
- (B) interesting
- (C) effective
- (D) all of these

114. A systematic process of determining to what extent instructional objectives are achieved by pupils is called :

- (A) Measurement
- (B) Assessment
- (C) Evaluation
- (D) Examination

(Turn over)

115. _____ means something that can be used to help achieve an aim.

- (A) Replacement
- (B) Resource
- (C) Source
- (D) Foundation

116. Educational management has been defined by G. Terry Page and J.B. Thomas as _____.

- (A) a method of operation and good management should result in an orderly integration of education and society.
- (B) a body of educational doctrines, comprises a number of principles.
- (C) theory and practice of the organization and administration of existing educational establishments and systems.
- (D) the force that integrates men and physical plant into an effective operating unit.

117. At which age a child can understand similarity and distinction between words ?

- (A) At the age of 5 to 6 yrs.
- (B) At the age of 1 to 3 yrs.
- (C) During adolescence
- (D) At the age of 9 to 10 yrs.

118. According to Kurt Lewin's which theory adolescents experience a rapidly widening life space along geographic, social and future time dimensions ?

- (A) Field Theory
- (B) Focal Theory
- (C) Grand Theory
- (D) Psychoanalytic Theory

119. Formulating general principles based on knowledge of examples and details is known as :

- (A) Coding system
- (B) Intuitive thinking
- (C) Eg-Rule method
- (D) Inductive reasoning

120. Pavlov's experiments with whom led to the discovery of a new principle which revolutionized thinking in social sciences ?

- (A) Cat
- (B) Rat
- (C) Dog
- (D) Chimpanzee

121. The process by which an organism acquires a new mode of behaviour, which tends to persist and affect the general behaviour pattern of the organism, to some degree is known as _____.

- (A) Emotion
- (B) Learning
- (C) Motivation
- (D) Teaching

122. TLM should be used to _____.

- (A) Make teaching more useful
- (B) Make teaching impressive
- (C) Provide concrete examples
- (D) Facilitate learning

123. Constructivist approach suggested that _____ is crucial for constructing knowledge.

- (A) prior knowledge of the learner
- (B) conditioning
- (C) punishment
- (D) rote memorisation

124. Which theory of motivation holds that the secrets of mind are locked within the cells of the nervous system ?

- (A) Pawn theory
- (B) Stimulation theory
- (C) Depth theory
- (D) Psychological theory

125. Constructivism is a learning theory based on :

- (A) Developmental Psychology
- (B) Evolutionary Psychology
- (C) Cognitive Psychology
- (D) Occupational Psychology

126. Which of the following is an important characteristic commonly found in effective school administrators at the primary level ?

- (A) Mastery over subject knowledge
- (B) Leadership and management
- (C) Effective communication
- (D) Interpersonal relationship

127. According to Chomsky, humans have a _____ to develop language.

- (A) perceptual set
- (B) telegraphic readiness
- (C) learning set
- (D) biological predisposition

128. According to B.F. Skinner language development in children takes place as an outcome of _____.

- (A) inborn capacity
- (B) training in grammar
- (C) imitation and re-inforcement
- (D) maturity

129. In a learner centric approach a teacher should _____.

- (A) clarify concepts by citing examples
- (B) facilitate student learning
- (C) explain concepts by using adequate support materials
- (D) demonstrate inside the classroom

130. Who was the first to use multiple choice items for assessment in 1915 ?
- (A) J. Piaget
 - (B) Vygotsky
 - (C) Skinner
 - (D) F.J. Kelly
131. Thorndike's which law of learning is based on the laws of use and disuse ?
- (A) Law of readiness
 - (B) Law of effect
 - (C) Law of exercise
 - (D) None of these
132. From the following list of methods of teaching identify those which are learner centered.
- (i) Project work
 - (ii) Chalk and talk
 - (iii) Lecturing with audio-visual
 - (iv) Computer aided instruction
 - (v) Simulation and role-playing
- (A) (ii), (iii) and (iv)
 - (B) (iv) and (v)
 - (C) (i), (ii) and (iii)
 - (D) (iii), (iv) and (v)
133. Which of the following is a characteristic of critical Pedagogy ?
- (A) Language and Power
 - (B) Democracy and Social justice
 - (C) The neutrality of knowledge
 - (D) All of these
134. A progressive teaching philosophy that challenges students to examine power structures and patterns of inequality within the status quo was put forwarded by _____.
- (A) Socrates
 - (B) Paulo Freire
 - (C) Swami Vivekananda
 - (D) Rabindranath Tagore
135. Who proposed that all children have language acquisition device ?
- (A) Piaget
 - (B) Chomsky
 - (C) Vygotsky
 - (D) Dan Slobin
136. Creative learning is based on _____.
- (A) Transfer of principles & skills
 - (B) Discover principles & concepts
 - (C) Memorizing facts & principles
 - (D) Mechanical reproduction

137. Which of the following is a tool used for individual test of intelligence ?

- (A) Raven's progressive matrices
- (B) Stanford-Binet test
- (C) Jalota's scale of intelligence
- (D) None of these

138. Which of the following statement is not related to assessment as learning ?

- (A) Encourages students to take responsibility for their own learning
- (B) Used to assess the learning weakness of the students
- (C) Encourages peer assessment
- (D) None of the above

139. Which of the following is not true in the context of teaching learning materials ?

- (A) A blackboard can be used for putting the cut outs of newspapers and magazines.
- (B) Teaching can be effective through the use of audio-visual aids.
- (C) Audio-visual aids help comprehend difficult or monotonous content.
- (D) Text books are one of the main TLM used in classrooms.

140. The quality of a test that measures, what it intends to measure is _____ of a test.

- (A) reliability
- (B) validity
- (C) objectivity
- (D) usability

141. The statement in a multiple choice type item is known as :

- (A) Stem
- (B) Distracter
- (C) Response
- (D) Question

142. Which is the period for acquiring experiences of Social subordination to authority figures outside the family ?

- (A) Infancy
- (B) Early childhood
- (C) Later childhood
- (D) Adolescence

143. Who is author of "Animal Learning" published in 1898 ?

- (A) L.L. Thurstone
- (B) J. P. Guilford
- (C) P.E. Vernon
- (D) E.L. Thorndike

144. The intelligence that is occupied with objects and things is _____.
- (A) Abstract intelligence
 - (B) Concrete intelligence
 - (C) Social intelligence
 - (D) None of these
145. TLM should be selected according to :
- (A) their availability in respective areas
 - (B) the objectives of teaching
 - (C) their cost
 - (D) none of the above
146. The evaluation in which variety of techniques are used to measure scholastic and non scholastic areas of the pupils is known as :
- (A) Continuous evaluation
 - (B) Placement evaluation
 - (C) Comprehensive evaluation
 - (D) Diagnostic evaluation
147. Which of the following statements is not an advantage of rubrics ?
- (A) Potential to be transferred into grades
 - (B) Provides the child more control of their own learning process
 - (C) It restricts the students mind power
 - (D) Narrows the gap between instruction and assessment

148. Human resource management means :

- (A) A method which an organisation collects, maintains and reports information on people and jobs.
- (B) The process of integrating the employee's needs and aspirations with organisational needs.
- (C) The process of bringing people and organisation together so that the goals of each are achieved.
- (D) The efforts to make life worth living for workers.

149. Which of the following is not a way of measuring retention ?

- (A) Method of recall
- (B) Method of construction
- (C) Method of relearning
- (D) Method of recognition

150. According to Johnson & Soloman stammering is mainly due to _____.

- (A) learning faulty ways of speech by imitation of other
- (B) heredity
- (C) emotional tension as observed in excessive fear
- (D) lack of balance among the two hemispheres of the brain

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