A – SECTION – I
ODIA (COMPULSORY FOR ALL STREAMS)

ପ୍ରଦତ୍ତ ଅନୁଚ୍ଛେଦଟି ପାଠକରି ପ୍ରଶ୍ନ (1 ରୁ 5 ପର୍ଯ୍ୟନ୍ତ) ଗୁଡ଼ିକର ଉତ୍ତର ନିର୍ଣ୍ଣୟ କର ।

ଭାରତ ସ୍ୱାଧୀନ ହେଲେ ବି ଆମର ଆଧୁନିକ ସଭ୍ୟତା ଓ ସଂସ୍କୃତି ପୁରାପୂରି ବିଦେଶୀ ଛାଞ୍ଚରେ ଗଢ଼ି ଉଠୁଛି । ଆମେ ତଥାକଥିତ ଶିକ୍ଷିତ ଲୋକେ ଘରେ ଓଡ଼ିଆ ଓ ବାହାରେ ଇଂରେଜୀ । ଏହି ପରମ୍ପରା ବ୍ରିଟିଶ ଶାସନ ସମୟରୁ ଗଢ଼ି ଗଢ଼ି ଆସିଛି । ସ୍ୱାଧୀନତା ପାଇବା ପରେ ଆମେ ସ୍ୱାଧୀନ ଭାରତ ମାତାର ଜିଭ କାଟି ଦେଉଛୁ । କେତେକ କହିଥାନ୍ତି ଆମେ ଇଂରେଜୀ ଭାଷାକୁ ରାଣୀର ସ୍ଥାନ ଦେଇଛୁ ଆଉ ଆମର ଜାତୀୟ ଭାଷା, ଆଞ୍ଚଳିକ ଭାଷା ହୋଇଛି ଚାକରାଣୀ । ମାତୃଭାଷାରେ ଆମ ରାଜ୍ୟର ପ୍ରତ୍ୟେକ କାର୍ଯ୍ୟ ନ ଚଳାଇଲେ ଆମର ପ୍ରତ୍ୟେକ ବିକାଶୋନ୍ମୁଖୀ ଯୋଜନା ପଛରେ ପଡ଼ିଯିବ- ଜାତୀୟତା ବି ନଷ୍ଟ ହୋଇଯିବ । ଫଳରେ ଜାତି ହେବ ଦୁର୍ବଳ ଓ ପଙ୍ଗୁ । ଇଉରୋପର ବିଭିନ୍ନ ଦେଶରେ ଦେଖିବା ସେମାନେ ନିଜ ନିଜ ଭାଷାରେ ସବୁକାର୍ଯ୍ୟ କରୁଛନ୍ତି । ସେମାନେ ସେମାନଙ୍କର ପ୍ରତ୍ୟେକ ଗବେଷଣା, ଲେଖାପଢ଼ା ନିଜ ଭାଷାରେ ହିଁ କରିଥାନ୍ତି । ବିଦେଶୀ ଲୋକଙ୍କର ଆମ୍ଭମାନଙ୍କ ଅପେକ୍ଷା ବିଶେଷ ଜାତୀୟ ଚେତନା ରହିଛି । ସେମାନେ କେବଳ ନିଜ ମାତୃଭାଷାରେ ଦସ୍ତଖତ କରନ୍ତି- ଅନ୍ୟଭାଷାରେ ଦସ୍ତଖତ କରନ୍ତି ନାହିଁ । କିନ୍ତୁ ଆମ୍ଭେମାନେ ଠିକ୍ ତାର ଓଲଟା କରି ନିଜକୁ ଗର୍ବିତ ମନେ କରୁଛୁ । ଇଂରେଜୀ ଶାସନ ବେଳେ ଦେଶୀୟ ଲୋକେ ଇଂରେଜୀ ଶିକ୍ଷ ଜନସାଧାରଣଙ୍କ ଉପରେ ହାକିମାତି କରିବା ସହିତ ସେମାନଙ୍କୁ ନାନାଭାବରେ ପ୍ରତାରିତ କରୁଥିଲା । ଆଜି ମଧ୍ୟ ଆମେ ଜନ ସାଧାରଣଙ୍କୁ ଠକିବା ପାଇଁ ଇଂରେଜୀ ଭାଷାକୁ ଅସ୍ତ୍ରରୂପେ ଗ୍ରହଣ କରିଛୁ ।

1. ଆମର ଜାତୀୟତା କିପରି ନଷ୍ଟ ହୋଇଯିବ ?
   (A) ମାତୃଭାଷାରେ ଲେଖାପଢ଼ା ନକଲେ
   (B) ମାତୃଭାଷାରେ କଥାବାର୍ତ୍ତା ନକଲେ
   (C) ମାତୃଭାଷାରେ ଦସ୍ତଖତ ନକଲେ
   (D) ମାତୃଭାଷାରେ ପ୍ରତ୍ୟେକ କାର୍ଯ୍ୟ ନକଲେ

2. କେତେକଙ୍କ ମତରେ କିଏ ରାଣୀ, କିଏ ଚାକରାଣୀ ?
   (A) ସଭ୍ୟତା, ସଂସ୍କୃତି
   (B) ଇଂରେଜୀ ଭାଷା, ଆଞ୍ଚଳିକ ଭାଷା
   (C) ଇଉରୋପ, ଭାରତ
   (D) ଇଂରେଜ ଲୋକ, ଦେଶୀୟ ଲୋକ

3. ଆଜି ଆମେ ଇଂରେଜୀ ଭାଷାକୁ ଅସ୍ତ୍ରରୂପେ ଗ୍ରହଣ କରିଛୁ କାହିଁକି ?
   (A) ଠକିବା ପାଇଁ
   (B) ହାକିମାତି କରିବା ପାଇଁ
   (C) ଗର୍ବ ଅନୁଭବ କରିବା ପାଇଁ
   (D) ନିଜକୁ ସୁରକ୍ଷା ଦେବା ପାଇଁ

4. ବିଦେଶୀ ଲୋକେ କେବଳ ନିଜ ମାତୃଭାଷାରେ କ'ଣ କରିଥାନ୍ତି ?
   (A) ବାର୍ତ୍ତାଳାପ
   (B) ପତ୍ର ବିନିମୟ
   (C) ଦସ୍ତଖତ
   (D) ଆବେଦନ

5. ସ୍ୱାଧୀନତା ପାଇବା ପରେ ଆମେ ଭାରତ ମାତାର କ'ଣ କରିଛୁ ?

(A) ପଦ ବନ୍ଦନା କରିଛୁ

(B) ଜିଭ କାଟି ଦେଇଛୁ

(C) କାୟା ବିସ୍ତାର କରିଛୁ

(D) ପାଦ ବାନ୍ଧି ଦେଇଛୁ

6. 'ହତାଏ' ଏଠାରେ କେଉଁ ପ୍ରତ୍ୟୟ ଲାଗିଅଛି ?

(A) ଆଏ

(B) ଅଏ

(C) ତାଏ

(D) ଏ

7. 'ଚିରସୁନ୍ଦର' ଏହି ସମସ୍ତ ପଦ କେଉଁ ସମାସର ନିୟମରେ ଗଠିତ ?

(A) ତତ୍‌ପୁରୁଷ

(B) କର୍ମଧାରୟ

(C) ଅବ୍ୟୟୀଭାବ

(D) ଦ୍ୱିଗୁ

8. ନିଆଁ ହୁତୁହୁତୁ ଜଳୁଛି। ରେଖାଙ୍କିତ ପଦଟି କେଉଁ ପଦ ?

(A) ସର୍ବନାମ

(B) କ୍ରିୟା

(C) ବିଶେଷଣ

(D) ବିଶେଷ୍ୟ

9. ଆପଣ କାହାକୁ ଡରୁଛନ୍ତି? ରେଖାଙ୍କିତ ଅଂଶଟି କେଉଁ ପଦ ?

(A) ବିଶେଷ୍ୟ

(B) ସର୍ବନାମ

(C) ଅବ୍ୟୟ

(D) କ୍ରିୟା

10. "ଉତ୍କଳମଣି ଗୋପବନ୍ଧୁ ବନ୍ୟାପୀଡ଼ିତଙ୍କ ସେବା କରି ସାରା ଓଡ଼ିଶାରେ ସୁନାମ ଅର୍ଜନ କରିଥିଲେ"। ଏହି ବାକ୍ୟରେ କେଉଁ 'ରୂଢ଼ି' ପ୍ରୟୋଗ କରାଯାଇପାରିବ ?

(A) ନାଁ ପକେଇବା

(B) ନାଁ ଧରିବା

(C) ନାଁ କରିବା

(D) ନାଁ ବୁଡ଼େଇବା

11. "କି କହିବ କିସ କରିବ କିଛି ହିଁ

ଭାବି ନ ପାରିଲା ମନେ

ବିସ୍ମୟ-କୀମୂତ ବ୍ୟାପିଗଲା ତାର

ସହସା ହୃଦ ଗଗନେ"

ଏହି ପଦରେ କେଉଁ ଅଳଙ୍କାର ପ୍ରୟୋଗ କରାଯାଇଛି ?

(A) ଅନୁପ୍ରାସ

(B) ଯମକ

(C) ରୂପକ

(D) ଶ୍ଳେଷ

12. "ମରାମତ ହୋଇନାହିଁ ଯାହା" ଏହି ବ୍ୟାସ ବାକ୍ୟର ସମାସ ନିଷ୍ପନ ପଦ କଣ ହେବ ?

(A) ଅସଜଡ଼ା

(B) ବେମରାମତ

(C) ନମରାମତ

(D) ଅମରାମତ

13. ଡୋ' ଲାଗି ଗୋପଦାଣ୍ଡ ମନା। (ତୋ) ରେଖାଙ୍କିତ ପଦର ବିଭକ୍ତି ନିର୍ଣ୍ଣୟ କର।

 (A) ଷଷ୍ଠୀ

 (B) ଦ୍ୱିତୀୟା

 (C) ଚତୁର୍ଥୀ

 (D) ପଞ୍ଚମୀ

14. "ଯେ ସତ କହେ, ସେ ନିର୍ଭୀକ ଅଟେ"। ପ୍ରଦତ୍ତ ବାକ୍ୟଟି କେଉଁ ପ୍ରକାର ବାକ୍ୟ ?

 (A) ସରଳ

 (B) ମିଶ୍ର

 (C) ଯୌଗିକ

 (D) ଜଟିଳ

15. 'ଶ୍ରୀମାନ୍' ଏହି ପଦରେ ଥିବା 'ନ୍' ର 'ଣ୍' ହେଲା ନାହିଁ କାହିଁକି ?

 (A) ପଦ ମଧ୍ୟରେ 'ର୍' ନଥିବାରୁ

 (B) ପଦ ମଧ୍ୟରେ 'ଷ୍' ନଥିବାରୁ

 (C) 'ନ' ପଦାନ୍ତରେ ଥିବାରୁ

 (D) 'ଆ' ପରେ ଥିବାରୁ

16. "ପାଣି ଗ୍ରହଣରୁ ବୁଝିଅଛୁ କାଲି
ସ୍ୱଭାବେ ତୁମ୍ଭେ ଉଦାର,
ବାହୁବଳେ ମାତର କହୁଅଛୁ ଆମ୍ଭେ
ମୁନିକନ୍ୟା ହେଉ ଦାରା"
ଏହି ପଦରେ କେଉଁ ଅଳଙ୍କାର ରହିଅଛି ?

 (A) ରୂପକ

 (B) ଅନୁପ୍ରାସ

 (C) ଉତ୍ପ୍ରେକ୍ଷା

 (D) ଶ୍ଳେଷ

17. 'ଖେଳୁଆଳ' ଏହାର ଗଠନ କିପରି ହୋଇଛି ?

 (A) ଖେଳ+ଉଆଳ

 (B) ଖେଳ+ଉଆଲ

 (C) ଖେଳୁ+ଆଳ

 (D) ଖେଳ+ଆଳ

18. ନିମ୍ନୋକ୍ତ ମଧ୍ୟରୁ କେଉଁ ଶବ୍ଦଟି ଠିକ୍ ?

 (A) ଆଶୀଷ

 (B) ଅପଦସ୍ଥ

 (C) ଅନାୟସ

 (D) ଭୂମିଷ୍ଠ

19. ନିମ୍ନୋକ୍ତ ମଧ୍ୟରୁ କେଉଁଟି ଶୁଦ୍ଧ ବାକ୍ୟ ଅଟେ ?

 (A) ପୂଜାସ୍ପଦ ଆଜି ଗୋସ୍ପଦ ପୁଷ୍କର।

 (B) ଆଲୋ ମଉସା? ଜଡ଼ ପଇସା,

 (C) ରାଜା ଶିବି ଗୋଟିଏ ଭୀତ କପୋତଟିକୁ ଅଭୟ ଦେଲୋ

 (D) 'ଜଳନ୍ତା' ନିଆଁରେ କୁତା ପକାଅ ନାହିଁ

20. 'ଖିଅ କାଢ଼ିବା'। ଏହି ରୂଢ଼ି କେଉଁ ଅର୍ଥ ପ୍ରକାଶ କରୁଛି ?

 (A) ସୂତା ବାହାର କରିବା

 (B) ଦୋଷ ବାଛିବା

 (C) ସୂତ୍ର ଧରିବା

 (D) ଅଡ଼ୁଆ ସୂତାକୁ ସଜାଡ଼ିବା

A – SECTION – II
ENGLISH (COMPULSORY FOR ALL STREAMS)

Read the passage below and answer the questions (from 21 to 25) that follow, choosing the correct alternatives given :

It may surprise many people that a thing like worry can be a killer. This has been proved by all medical researches that worry is a major cause of heart ailments, blood pressure, rheumatism, ulcers, skin problems, asthma and many other psychosomatic diseases. Dr. Alexis Carrel, a Nobel Prize winner in medicine, said, "Businessmen who do not know how to fight worry die young". But so do a lot of home-makers, lawyers and ordinary clerks who do not control this evil.

There are several causes of worries. The fast-paced and complicated life style that most people are leading today contributes largely to our anxieties. Shortages, fears, competitions, dissatisfaction – everything adds to the burden on our minds. Some of these factors may be uncontrolled but most of them are within our control.

According to Plato, the Greek Philosopher, "The greatest mistake physicians make is that they attempt to cure the body without attempting to cure the mind. Mind and body are one and should not be treated separately".

Emotions like futility, frustration, anxiety, worry, fear, despair, defeat, etc. are negative emotions. These affect much our mental as well as physical health. Worry specially creates a high degree of tension. Many a time we find ourselves unable to concentrate due to worries. Only a cool and worriless mind functions normally and to its capacity.

21. Man can function and live properly if
    (A) he is free from worries
    (B) he doesn't worry
    (C) he is tension free and worriless
    (D) he cares nothing about anything

22. The main hurdles coming in the way of man's trying to work properly are
    (A) Work and anxiety
    (B) Tension and worry
    (C) Tension and high blood pressure
    (D) Fear and effects of disease

23. The word 'futility' means
    (A) Usefulness
    (B) Uselessness
    (C) Carefulness
    (D) Carelessness

24. This passage is about
    (A) A thing like worry can be a killer
    (B) The causes and effects of worry
    (C) The cool and worriless mind
    (D) The fast paced life style

25. According to the conclusion and findings of the medical researches, worry is the major cause of
    (A) Defeat and despair
    (B) Modern psychosomatic diseases
    (C) Serious ailments
    (D) Worry and anxiety

26. Look, the road _____ now. (Fill in the blanks)
    (A) is repaired
    (B) is repairing
    (C) is being repaired
    (D) has been repairing

27. Andrew died last week. He _____ from cancer for some years. (Fill in the blanks)
    (A) suffered
    (B) is suffering
    (C) has been suffering
    (D) had been suffering

28. The word, 'isle' is pronounced as
    (A) /ail/
    (B) /asil/
    (C) /isl/
    (D) /isal/

29. Which letter is silent in the word 'formal'?
    (A) o
    (B) r
    (C) a
    (D) l

Read the poem carefully and answer the questions that follow (from 30 to 34), choosing the correct alternatives given.

This is my prayer to you my lord
Give me the strength
Lightly to bear my joys and sorrows
Give me the strength
to make my love fruitful in service
Give me the strength
never to disown the poor
or bend my knees before insolent might
Give me the strength
to raise my mind
high above daily trifles
And give me the strength
to surrender my strength
to your will with love.

30. The poet wants to be helpful to the
    (A) Needy
    (B) Poor
    (C) Mighty
    (D) Honest

31. The poet won't like to surrender
    (A) Before his enemies
    (B) Before the insolent
    (C) Before the powerful
    (D) Before the insolent and powerful

32. The word, 'trifles' means
    (A) Useful things
    (B) Useless things
    (C) Meaningful things
    (D) Important things

33. The poet prays to God to give him strength to bear his joys and sorrows. It means

(A) Life is a mixture of joys and sorrows

(B) Life is full of sorrows with less pleasure

(C) Life is full of pleasure with less sorrows

(D) Man cannot bear his sorrows

34. 'Love' for the poet means

(A) A thing that bears fruit

(B) A thing that brings success

(C) A thing that progresses in serving others

(D) A thing that serves others

35. I would say that about 50 per cent of the houses _____ major repairs.

(A) need

(B) needs

(C) is needing

(D) are needing

36. If Arun had asked for money, I ____.

(A) could help him

(B) would help him

(C) could have helped him

(D) can have helped him

37. Priya felt very angry _____ the injustice of the situation. (Fill in the blanks)

(A) with   (B) for

(C) about   (D) at

38. Which of the following is a grammatically acceptable sentence ?

(A) I'm going to Bhubaneswar tomorrow. Amn't I ?

(B) I'm going to Bhubaneswar tomorrow, amn't I ?

(C) I'm going to Bhubaneswar tomorrow, aren't I ?

(D) I'm going to Bhubaneswar. Aren't I ?

39. Lots of people _____ cricket these days. (Fill in the blanks)

(A) go into

(B) go in at

(C) go in for

(D) go on for

40. 'There was no news; neverthless, she went on hoping'.

The sentence above is a

(A) Simple sentence

(B) Compound sentence

(C) Complex sentence

(D) Compound and complex sentence

B – SECTION – III
SCIENCE (PCM) PHYSICS

41. How eddy current can be produced in a bulk piece of conducting material ?
    (A) By changing magnetic field in the conductor
    (B) By placing it under a changing electric field
    (C) By placing it under an uniform magnetic field
    (D) By rotating conducting material

42. Which of the following rules is used to identify the direction of the current induced in a wire moving in a magnetic field ?
    (A) Ampere's Rule
    (B) Fleming's Left Hand Rule
    (C) Fleming's Right Hand Rule
    (D) None of the above

43. A pencil is placed upright between F and 2F in front of a convex lens then
    (A) Image formed is virtual, magnified and upright
    (B) Image formed is real, magnified and upright
    (C) Image formed is real, magnified and inverted
    (D) No image will be formed

44. A bifocal lens is used as a remedy in which of the following defects in the eyes ?
    (A) Hypermetropia
    (B) Presbyopia
    (C) Astigmatism
    (D) Myopia

45. A ball is projected with a velocity 10 m/s at an angle of 60° with the vertical direction. Its speed at the highest point of its trajectory will be
    (A) 10 m/s   (B) Zero
    (C) 5 m/s   (D) $5\sqrt{3}$ m/s

46. Kepler's second law of planetary motion is also known as
    (A) Law of periods
    (B) Law of equal areas
    (C) Law of orbits
    (D) Law of planets

47. A periscope makes use of
    (A) Three spherical mirrors
    (B) Two spherical mirrors
    (C) Three plane mirrors
    (D) Two plane mirrors

48. The force between two charges is 200 N. If the distance between the charges is doubled, the force will be
    (A) 50 N   (B) 100 N
    (C) 200 N   (D) 400 N

49. Strain is a _____ quantity.
    (A) Scalar
    (B) Dimensionless
    (C) Vector
    (D) None of these

50. According to Hook's law, if stress is increased, the ratio of stress to strain will
    (A) Increase
    (B) Decrease
    (C) Remains constant
    (D) First increase then decrease

51. The potential inside a charged hollow sphere is
    (A) Zero
    (B) Same as that on the surface
    (C) Less than that on the surface
    (D) More than that on the surface

52. A current of 5 A is drawn by a filament of an electric bulb for 2 minutes. Find the amount of electric charge that flows through the circuit?
    (A) 100 C   (B) 300 C
    (C) 450 C   (D) 600 C

53. If a lift is moving with constant acceleration 'a' in the upward direction, then the normal reaction by the floor of the lift on the mass 'm' will be
    (A) ma   (B) m(g – a)
    (C) m(g + a)   (D) mg

54. A particle is moving in a circle with uniform speed. It has constant
    (A) Velocity
    (B) Acceleration
    (C) Kinetic energy
    (D) Displacement

55. Electric wires are generally coated with
    (A) Polypropylene
    (B) Polyvinyl chloride
    (C) Polyurethane
    (D) Polyethylene

56. 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

57. What happens to the weight of a rocket with respect to earth, if it moves away from the Earth's surface?
    (A) Decreases
    (B) Increases
    (C) Remains the same
    (D) None of the above

58. Which of the following substances has the highest elasticity?
    (A) Rubber   (B) Copper
    (C) Sponge   (D) Steel

59. A gun is fired and the echo is heard after 2.5 seconds. Find the distance of the gun from the cliff, if the velocity of sound in air is 332 m/s.
    (A) 415 m   (B) 830 m
    (C) 420 m   (D) 840 m

60. Which of the following is not a property of ultrasound that makes it useful in medicine?
    (A) The waves are transverse
    (B) High frequency
    (C) Ability to travel along path even with obstacles
    (D) None of the above

B – SECTION – III
SCIENCE (PCM) CHEMISTRY

61. To which block do the elements with atomic number 56 belong ?
    - (A) s
    - (B) p
    - (C) f
    - (D) d

62. Which of the following atom has no neutron in its nucleus ?
    - (A) Helium
    - (B) Protium
    - (C) Lithium
    - (D) Tritium

63. The nature of bonding in CCl_4 and CaH_2 is
    - (A) Electrovalent in both CCl_4 and CaH_2
    - (B) Covalent in CCl_4 and electrovalent in CaH_2
    - (C) Electrovalent in CCl_4 and covalent in CaH_2
    - (D) Covalent in both CCl_4 and CaH_2

64. NH_3 has a much higher boiling point than PH_3, because
    - (A) NH_3 has a largest molecular weight
    - (B) NH_3 undergoes umbrella inversion
    - (C) NH_3 forms hydrogen bond
    - (D) NH_3 contains ionic whereas PH_3 contains covalent bonds

65. Which of the following alkene will give the same product when treated with HBr in presence and absence of peroxide ?
    - (A) Propene
    - (B) Butene-2
    - (C) 2-methylpropene
    - (D) Butene-1

66. How many isomers does C_6H_{14} have ?
    - (A) 3
    - (B) 6
    - (C) 5
    - (D) 4

67. On increasing the concentration of reactants in a reversible reaction, the equilibrium constant will
    - (A) Depend on the concentration
    - (B) Increase
    - (C) Unchanged
    - (D) Decrease

68. Bee sting leaves an acid which causes pain and irritation. The acid released is
    - (A) Tartaric acid
    - (B) Citric acid
    - (C) Ethanoic acid
    - (D) Methanoic acid

69. What is called arenes ?
    - (A) Aromatic hydrocarbons
    - (B) Alkynes
    - (C) Unsaturated hydrocarbons
    - (D) Saturated hydrocarbons

70. Which of the following do not contain carbon-oxygen double bonds ?
    (A) Ketone   (B) Esters
    (C) Acids   (D) Ethers

71. Which among the following is the mass of two molecules of water ?
    (A) 5.98×10^{-23} g
    (B) 36 g
    (C) 18 g
    (D) 36×10^{-23} g

72. CO_2 when passed in excess, in lime water turns colourless again because of
    (A) Calcium carbonate
    (B) Calcium bicarbonate
    (C) Calcium chloride
    (D) Copper carbonate

73. Which of the following gases will have the highest rate of diffusion ?
    (A) O_2 (B) CO_2
    (C) NH_3 (D) N_2

74. The potential energy of a molecule on the surface of liquid compared to one inside the liquid is
    (A) Zero   (B) Smaller
    (C) The same   (D) Greater

75. Which among the following happens in an oxidation reaction ?
    (A) Electrons are lost
    (B) Electrons are gained
    (C) Protons are lost
    (D) Protons are gained

76. To which category of reactions does the following chemical reaction belong ?
    $NaCl(aq) + AgNO_3(aq) \rightarrow NaNO_3(aq) + AgCl(s)$
    (A) Redox reaction
    (B) Displacement reaction
    (C) Combination reaction
    (D) Double displacement reaction

77. Which one of the following furnaces can produce the highest temperature ?
    (A) Blast furnace
    (B) Reverberatory furnace
    (C) Muffle furnace
    (D) Electric furnace

78. Which of the following statement is correct ?
    (A) Bauxite is an ore of aluminium
    (B) Magnetite is an ore of manganese
    (C) Haematite is an ore of mercury
    (D) Pyrites is an ore of phosphorus

79. The most electropositive halogen is
    (A) F
    (B) Cl
    (C) Br
    (D) I

80. Elements having same valence electrons are placed in same group but there is an exception with
    (A) Ne   (B) He
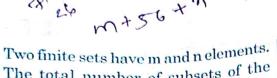   (C) Ar   (D) Xe

B – SECTION – III
SCIENCE (PCM) MATHEMATICS

81. What is the distance between the chords of contact of the tangent to the circle $x^2 + y^2 + 2gx + 2fy + c = 0$ from the origin and the point (g, f) ?

(A) $g^2 + f^2$

(B) $\dfrac{1}{2}(g^2 + f^2 + c)$

(C) $\dfrac{1}{2}\left(\dfrac{g^2 + f^2 + c}{\sqrt{g^2 + f^2}}\right)$

(D) $\dfrac{1}{2}\left(\dfrac{g^2 + f^2 - c}{\sqrt{g^2 + f^2}}\right)$

82. For what value of m, the line $y = mx + 1$ is a tangent to the parabola $y^2 = 4x$?

(A) 1   (B) 2

(C) 4   (D) 3

83. What is the coefficient of x^{99} in the expansion of $(x - 1)(x - 2) \dots (x - 100)$?

(A) 5050

(B) 5000

(C) −5050

(D) −5000

84. What is the value of $\lim\limits_{m \to \infty}\left(\cos\dfrac{x}{m}\right)^m$?

(A) 1

(B) e

(C) e^{-1}

(D) None of these

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

(A) $\dfrac{2}{3}$ (B) $\dfrac{4}{5}$

(C) $\dfrac{7}{8}$ (D) $\dfrac{15}{16}$

86. What is the variance of first n natural numbers ?

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

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

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

(D) None of these

87. Two finite sets have m and n elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. What are the values of m and n ?

(A) m = 7, n = 6   (B) m = 6, n = 3

(C) m = 5, n = 1   (D) m = 8, n = 7

88. If R is a relation on a finite set having n elements, then the number of relations on A is

(A) 2^n

(B) 2^{n^2}

(C) n^2

(D) n^n

89. What are the values of λ and μ for which the system of equations

x + y + z = 6, x + 2y + 3z = 10 and x + 2y + λz = μ have no solutions ?

(A) λ = 3, μ = 10

(B) λ = 3, $\mu \neq$ 10

(C) $\lambda \neq$ 3, μ = 10

(D) $\lambda \neq$ 3, $\mu \neq$ 10

90. The incenter of the triangle formed by the lines x = 0, y = 0 and 3x + 4y = 12 is at

(A) $\left(\dfrac{1}{2}, \dfrac{1}{2}\right)$ (B) (1, 1)

(C) $\left(1, \dfrac{1}{2}\right)$ (D) $\left(\dfrac{1}{2}, 1\right)$

91. If y = 4x – 5 is a tangent to the curve $y^2 = px^3 + q$ at (2, 3), then what are the values of p and q ?

(A) p = 2, q = –7

(B) p = –2, q = 7

(C) p = –2, q = –7

(D) p = 2, q = 7

92. What is the value of a for which the equation $x^3 + ax + 1 = 0$ and $x^4 + ax^2 + 1 = 0$ have a common root ?

(A) 2

(B) –2

(C) 0

(D) None of these

93. What is the number of all subgroups of the group $(z_{60}, +)$ of integers modulo 60 ?

(A) 2

(B) 10

(C) 12

(D) 60

94. A vertical cone of volume V with vertex downward is filled with water upto half of its height. What is the volume of the water ?

(A) $\dfrac{V}{2}$

(B) $\dfrac{V}{4}$

(C) $\dfrac{V}{8}$

(D) $\dfrac{V}{16}$

95. If a function $f : [2, \infty) \to B$ defined by $f(x) = x^2 - 4x + 5$ is a bijection, then B is

(A) R

(B) $[1, \infty)$

(C) $[4, \infty)$

(D) $[5, \infty)$

96. If $a^2 + b^2 + c^2 = 1$, then what is the maximum value of abc ?

(A) $\dfrac{1}{3}$

(B) $\dfrac{1}{3\sqrt{3}}$

(C) $\dfrac{2}{\sqrt{3}}$

(D) 1

97. A square is inscribed in a circle and another in a semi-circle of same radius. What is the ratio of the area of the 1st square to the area of the 2nd square ?

(A) 2 : 5   (B) 5 : 2

(C) 4 : 5   (D) 5 : 4

98. What is the value of
$2^{\frac{1}{4}} . 4^{\frac{1}{8}} . 8^{\frac{1}{16}} . 16^{\frac{1}{32}} \ldots \infty$?

(A) 1

(B) 2

(C) $\dfrac{3}{2}$

(D) $\dfrac{5}{2}$

99. If $(1 + \tan\theta)(1 + \tan\phi) = 2$, then what is the value of $\theta + \phi$?

(A) $\dfrac{\pi}{6}$

(B) $\dfrac{\pi}{4}$

(C) $\dfrac{\pi}{3}$

(D) $\dfrac{\pi}{2}$

100. What is the value of
$\sqrt{3}\cot 20° - 4\cos 20°$?

(A) 1   (B) −1

(C) 0   (D) None of these

C – SECTION – IV
(COMPULSORY FOR ALL STREAMS) CHILD DEVELOPMENT, PEDAGOGY, SCHOOL MANAGEMENT AND EVALUATION

101. Who developed the interaction analysis category system in Education for increasing the teaching effectiveness ?
    (A) Ned A. Flander
    (B) Rayon
    (C) Amidon and Simon
    (D) Ogburn and Nimkoff

102. Black board is a which type of teaching aids ?
    (A) Audio aids
    (B) Visual aids
    (C) Audio visual aids
    (D) None of the above

103. Section 21 of the Right to Education Act deals with which of the following ?
    (A) Corporal punishment
    (B) Teachers qualification
    (C) School management committee
    (D) Infrastructure of the school

104. Which is the correct sequence of the evaluation ?
    1. Determine what is to be evaluated
    2. Conclusion
    3. Selection of Techniques
    4. Collection of information
    (A) 1, 3, 4, 2
    (B) 2, 3, 4, 1
    (C) 1, 4, 3, 2
    (D) 3, 2, 1, 4

105. Educational management has not been drawn from which of the following discipline ?
    (A) Economics
    (B) Sociology
    (C) Political science
    (D) Chemistry

106. Which of the following is the first aspect of educational management ?
    (A) Organisation
    (B) Direction
    (C) Planning
    (D) Evaluation

107. Which one is an authoritarian level of teaching ?
    (A) Teacher centred
    (B) Child centred
    (C) Experience based
    (D) Learning centred

108. Which statement is not correct about TLMs ?
    (A) It provides clarity of subject matter
    (B) Helps in developing interest
    (C) Develops understanding about content
    (D) None of the above

109. As per the Right to Education Act which of the following Committee is very crucial in actualising the goals ?
(A) Village Level Committee
(B) School Management Committee
(C) Parent Teacher Association
(D) Mother Teacher Association

110. _____ percent of total members shall constitute quorum for the Parent Teacher Association meeting.
(A) 40
(B) 30
(C) 50
(D) 25

111. Caroll (1965) defined educational psychology as
(A) It is the science that studies student behaviour in educational settings.
(B) The study of school learning in all its aspects.
(C) A scientific study of the life stages in the development of an individual.
(D) An applied discipline which combines the two different fields of education and psychology.

112. On the study of child development, who wrote, "growth carries a more dynamic connotation; which organically ties the present with the past and directs it towards the future".
(A) Arnold Gesell
(B) John Locke
(C) George E. Coghill
(D) Donald O. Hebb

113. Learning is an association between stimulus and
(A) Animal
(B) Past experience
(C) Response
(D) Behaviour

114. When infants think by means of their senses and motor acting is the stage of
(A) Sensori motor period
(B) Pre operational period
(C) Concrete operational period
(D) Formal operational period

115. Which of the following is not a conditions of learning ?
(A) Motivation
(B) Psychological safety
(C) Feedback
(D) Abstention

116. Who developed a learning theory connectionism ?
(A) Edward Thorndike
(B) Ivan Pavlov
(C) John Watson
(D) Wolfgang Kohler

117. Which type of evaluation is used at the end of the course to determine students mastery on the course ?
(A) Placement
(B) Diagnostic
(C) Formative
(D) Summative

118. What is the meaning of comprehensive evaluation ?
    (A) It refers to the scholastic aspect
    (B) It refers to co-scholastic aspect
    (C) It refers to both scholastic and co-scholastic aspect
    (D) It refers to continuous process

119. Law of readiness of learning refers to
    (A) Repetition of learning
    (B) Satisfaction of learning
    (C) Ready to learn
    (D) Reoccur when situation is repeated

120. Learning of a child grows with the increase of age. Which condition of learning refers to it ?
    (A) Readiness
    (B) Maturation
    (C) Motivation
    (D) None of the above

121. In which animals was the principle of classical conditioning applied ?
    (A) Cat
    (B) Rat
    (C) Dog
    (D) All of the above

122. According to Pavlov's classical conditioning theory, the unconditioned stimulus was
    (A) The salivation of food
    (B) Food
    (C) Bell
    (D) Salivation to bell

123. Which concept was introduced in the progressive school of Britain ?
    (A) School Based Evaluation
    (B) Formative Evaluation
    (C) Continuous and Comprehensive Evaluation
    (D) Diagnostic Evaluation

124. Which statement is not correct about learning ?
    (A) It is modification of behaviour
    (B) Outcomes of it provide experiences
    (C) It is reflex
    (D) It affects general behavioural pattern

125. Each institution have its own long-term and short-term plans is known as
    (A) Academic planning
    (B) Curricular planning
    (C) Strategic planning
    (D) Institutional planning

126. Which of the following is not a pillar of management principle of Fredrick Taylor ?
    (A) Success in the given work
    (B) Relationship between time and salary
    (C) Respectable behaviour
    (D) Difficulty level of the given work

127. Emotional response to symbolic stimuli is primarily the result of

(A) Maturation

(B) Learning

(C) Adjustment

(D) Increased sensory perception

128. Which of the following is not a factor for affecting retention ?

(A) Interference

(B) Reorganisation

(C) Elapsed time

(D) All of these

129. The process of taking new information into our already existing knowledge is known as

(A) Accommodation

(B) Assimilation

(C) Adaptation

(D) Equilibration

130. Who is known for his socio-cultural theory ?

(A) Carl Rogers

(B) Jean Piaget

(C) Lev Vygotsky

(D) None of the above

131. Which of the following statement is not correct for school development plan ?

(A) It is made by the concerned government.

(B) It is made by the school at local level.

(C) It is made for the development of school infrastructure.

(D) It is made with the consultation of local community.

132. "Of all the different factors which influence the quality of education and its contribution to national development, the quality competence and character of teachers are undoubtedly the most significant". Who said it ?

(A) Secondary Education Commission

(B) Education Commission, 1964-65

(C) National Education Policy, 1986

(D) National Education Policy, 2020

133. Which validity of a test is established by determining whether the test items adequately sample the skills and subject matter of the course ?

(A) Face validity

(B) Empirical validity

(C) Content validity

(D) Factorial validity

134. A pupil's composite or average educational achievement on a battery of achievement tests of school subjects is called as his _____
    (A) Mental age
    (B) Educational age
    (C) Chronological age
    (D) Attainment age

135. Which of the following statement is correct about how were Piaget and Vygotsky similar ?
    (A) Both say cultural differences have effect on development
    (B) Both suggest development is universal
    (C) Both acknowledge the role of peer interaction in development
    (D) None of the above

136. Zone of Proximal Development (ZPD) is associated with the theory of
    (A) Lev Vygotsky
    (B) Carl Rogers
    (C) Jean Piaget
    (D) B. F. Skinner

137. Stimuli that increases probability of desirable responses of the learner is known as _____
    (A) Reinforcement
    (B) Explanation
    (C) Illustrating with example
    (D) Stimulus variation

138. Who formulated number of postulates which explained the intervening variables essential for learning ?
    (A) Kohler
    (B) Skinner
    (C) Hull
    (D) Tolman

139. Which Thorndike's Law is based on the laws of use and disuse ?
    (A) Law of effect
    (B) Law of readiness
    (C) Law of exercise
    (D) None of these

140. Which of the following is a factor which assist in the progress of learning ?
    (A) Significance
    (B) Problem attitude
    (C) Attentiveness
    (D) All of these

141. In which year the Ministry of Education was renamed as Ministry of Human Resource Development ?
    (A) 1982
    (B) 1983
    (C) 1985
    (D) 1989

142. Which of the following is a principal academic adviser to the Ministry of Education in matter relating to school education ?
    (A) Central Advisory Board on Education (CABE)
    (B) National Council of Educational Research and Training (NCERT)
    (C) University Grant Commission (UGC)
    (D) National University for Education Planning and Administration (NUEPA)

143. One who has learnt to drive a Maruti car, drives Ambassador with little difficulty. The phenomenon illustrated is called
(A) Relearning
(B) Overlearning
(C) Automatic learning
(D) Transfer of learning

144. Positive transfer of training is most possible with
(A) Similar tasks
(B) Dissimilar tasks
(C) Verbal and motor tasks
(D) None of the above

145. Which of the following theories is related to learning by consequences ?
(A) Operant conditioning
(B) Insight learning
(C) Classical conditioning
(D) Cognitive learning

146. The term schema describes
(A) Mental and physical actions
(B) Social actions
(C) Emotional actions
(D) None of the above

147. Effective teaching by and large, is a function of
(A) Teacher's incentive
(B) Teacher's honesty
(C) Teaching makes students learn and understand
(D) Teacher's liking for job of teaching

148. Absenteeism in the class can be minimised by
(A) Punishing students
(B) Teaching the students effectively and sincerely
(C) Ignoring the fact of absenteeism
(D) None of the above

149. Which type of educational management is more important than others in the following ?
(A) Authoritarian
(B) Internal educational management
(C) Centralised educational management
(D) External educational management

150. Which of the following is a "I" style of educational management ?
(A) Autocratic
(B) Democratic
(C) Decentralised
(D) Creative