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OSSTET (2nd) Exam

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(Science-PCM) Paper-I

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No. of Printed Pages : 72
Total No. of Questions : 510
Questions to be answered : 150

OSSTET 2021 (2nd)
PAPER - I

Question Booklet Sl. No.
101424

SET : D

Time : 2 Hours 30 Minutes
Full Marks : 150

Roll No. (in figures): _____
(in words) : _____
Date of Exam. : _____
Centre Name : _____
Centre Code : _____

PLEASE READ THE INSTRUCTION PRINTED ON THE BACK OF THIS BOOKLET

The candidates are required to answer all the Sections in the OMR Answer Sheet.

This Booklet is to be taken away by the candidates after examination is over and the OMR Answer Sheet to be handed over to the Invigilator(s) concerned.

THIS BOOKLET CONTAINS FOUR SECTIONS (SECTION - I TO IV)

SECTIONS	SUBJECTS	NO. OF QUESTIONS	FULL MARKS
A : Section-I	Odia (Compulsory for all Streams)	1-20=20	20
A : Section-II	English (Compulsory for all Streams)	21-40=20	20
B : Section-III	Optional (any one group/subject to be chosen) Arts : Odia + English + History & Political Science + Geography & Economics	41-100=60	60
	Science (PCM) : Physics + Chemistry + Mathematics	41-100=60	60
	Science (CBZ) : Chemistry + Botany + Zoology	41-100=60	60
	Classical Sanskrit	41-100=60	60
	Urdu	41-100=60	60
	Telugu	41-100=60	60
	Hindi	41-100=60	60
C : Section-IV	Compulsory for all streams : Child Development, Pedagogy, School Management & Evaluation	101-150=50	50

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SET – D

A – SECTION – I
ODIA (COMPULSORY)

ପ୍ରଦତ୍ତ ଅନୁଚ୍ଛେଦଟି ପାଠ କରି ପ୍ରଶ୍ନ (ନଂ 1 ରୁ 5 ପର୍ଯ୍ୟନ୍ତ) ଗୁଡ଼ିକର ଉତ୍ତର ବାଛ :

୧୯୪୨ ଫେବ୍ରୁଆରୀରେ ଚୀନ୍ ଦେଶର ନେତା ମାର୍ଶାଲ୍ ଚିଆଙ୍ଗ ବାରଦିନିଆ ଗସ୍ତରେ ଭାରତ ଆସିଥାନ୍ତି । ଯୁଦ୍ଧ ବିଷୟରେ ଭାରତର ବଡ଼ ଲାଟଙ୍କ ସହିତ ଆଲୋଚନା କରିବା ତାଙ୍କର ଲକ୍ଷ୍ୟଥାଏ । ଏହି ଅବସରରେ ଗାନ୍ଧିଜୀ ଓ ଜବାହରଲାଲଙ୍କ ସହିତ ଭେଟିବାର ଆଗ୍ରହ ରଖି ସେ ଆସିଥାନ୍ତି । ଦୁହିଁଙ୍କ ସହିତ ଚିଆଙ୍ଗଙ୍କର କଥାବାର୍ତ୍ତା ହେଲା । ଭାରତରୁ ତାଙ୍କର ବିଦାୟବାର୍ତ୍ତାରେ ମାର୍ଶାଲ୍ ଚିଆଙ୍ଗ କହିଗଲେ ଯେ ବ୍ରିଟିଶ୍ ସରକାର ଯଥାଶୀଘ୍ର ଭାରତକୁ ରାଜନୈତିକ କ୍ଷମତା ପ୍ରଦାନ କରନ୍ତୁ । ତେବେ ଭାରତ ଜାପାନ୍ ବିରୁଦ୍ଧରେ ଶକ୍ତି ଖଟେଇ ଲଢ଼ିବ । ଜାପାନ୍ ଯୋଗୁ ଚୀନରେ ମଧ୍ୟ ଆତଙ୍କ ଖେଳି ଯାଇଥାଏ । ଏକଥା ଆମେରିକା ମଧ୍ୟ ବୁଝିଥାଏ ଓ ଇଂଲଣ୍ଡ ଉପରେ ଚାପ ପକାଉଥାଏ । ଦ୍ୱିତୀୟ ବିଶ୍ୱଯୁଦ୍ଧରେ ଆମେରିକା ଓ ରଷିଆ ଇଂଲଣ୍ଡ ପଟେ ରହି ଲଢୁଥାନ୍ତି । ରଷିଆ ଓ ଜର୍ମାନ୍ ମଧ୍ୟରେ ସୁସମ୍ପର୍କ ଥିଲା । ବିଜୟ ଉଲ୍ଲାସରେ ମତ୍ତହୋଇ ହିଟ୍‌ଲର ରଷିଆ ଆକ୍ରମଣ କରିବାରୁ ରଷିଆ ଇଂଲଣ୍ଡ ସହିତ ମିଶିଲା । କୁହାଯାଉଥାଏ, ଦ୍ୱିତୀୟ ମହାଯୁଦ୍ଧ ଫାସୀବାଦ ଓ ନାଜୀବାଦ ବିରୁଦ୍ଧରେ ଗଣତନ୍ତ୍ର ବାଦର ଯୁଦ୍ଧ । ଯଦି ଏପରିକଥା, ତେବେ ଯୁଦ୍ଧ ପରେ ବ୍ରିଟିଶ୍ ସରକାର ଭାରତକୁ ସ୍ୱେଚ୍ଛାରେ ସ୍ୱାଧୀନତା ପ୍ରଦାନ କରିବ ବୋଲି ଘୋଷଣା କରିବା ଉଚିତ୍ ହୁଅନ୍ତା । ଏହି ମର୍ମରେ କିଛି ଘୋଷଣା କରିବାକୁ ଆମେରିକାର ପ୍ରେସିଡ଼େଣ୍ଟ୍ ରୁଜଭେଲଟ୍ ଚର୍ଚ୍ଚିଲଙ୍କ ଉପରେ ଚାପ ପକାଉଥାନ୍ତି । ବିଶେଷତଃ ଜାପାନ୍, ଇଂଲଣ୍ଡ ବିରୁଦ୍ଧରେ ଯୁଦ୍ଧରେ ଯୋଗଦାନ କରିବା ପରେ ଭାରତର ସହଯୋଗ ଜରୁରୀ ହୋଇପଡ଼ିଥାଏ । ପ୍ରେସିଡ଼େଣ୍ଟ୍ ରୁଜ୍‌ଭେଲଟ୍ କର୍ଣ୍ଣେଲ୍ ଲୁଇସ୍ ଜନ୍‌ସନ୍‌ଙ୍କୁ ତାଙ୍କର ଦୂତ ଭାବେ ଭାରତୀୟ ନେତାଙ୍କ ସହିତ କଥାବାର୍ତ୍ତା କରିବା ପାଇଁ ପଠାଇଥାନ୍ତି । ଗୋଟିଏ ପରାଧୀନ ଦେଶକୁ ଏକ ସ୍ୱତନ୍ତ୍ର ଦେଶ ସିଧାସଳଖ ଦୂତ ପଠାଇବା ଅସାଧାରଣ ପଦକ୍ଷେପ । ରୁଜ୍‌ଭେଲଟଙ୍କ ମନୋଭାବ ବୁଝିବା ପାଇଁ ଏହି ଘଟଣାଟି ଯଥେଷ୍ଟ ।

1. ଦ୍ୱିତୀୟ ବିଶ୍ୱଯୁଦ୍ଧରେ ରଷିଆ ଇଂଲଣ୍ଡ ସହିତ କାହିଁକି ମିଶିଥିଲା ?

(A) ଇଂଲଣ୍ଡ ସହିତ ସୁସମ୍ପର୍କ ଥିବାରୁ

(B) ନାଜୀବାଦର ବିରୋଧ ଯୋଗୁ

(C) ହିଟ୍‌ଲର ରଷିଆ ଆକ୍ରମଣ କରିବାରୁ

(D) ରୁଷିଆ ଜର୍ମାନୀକୁ ଘୃଣା କରୁଥିବାରୁ

2. ବିଦାୟ ବାର୍ତ୍ତାରେ ମାର୍ଶାଲ୍ ଚିଆଙ୍ଗ୍ ଭାରତକୁ ବ୍ରିଟିଶ୍ ସରକାର ରାଜନୈତିକ କ୍ଷମତା ପ୍ରଦାନ ସପକ୍ଷରେ କାହିଁକି କହିଥିଲେ ?

(A) ଏହାଦ୍ୱାରା ଭାରତ, ଜାପାନ ବିରୁଦ୍ଧରେ ପୂର୍ଣ୍ଣଶକ୍ତିରେ ଲଢ଼ି ପାରିବ

(B) ଭାରତୀୟ ନେତାମାନଙ୍କର ରାଜନୈତିକ ଦକ୍ଷତା ଥିବାରୁ

(C) ଭାରତରେ ଗଣତାନ୍ତ୍ରିକ ଶାସନର ପ୍ରତିଷ୍ଠା ପାଇଁ

(D) ଭାରତର ସ୍ୱାଧୀନତା ସଂଗ୍ରାମକୁ ସମର୍ଥନ କରିବା ପାଇଁ

3. କ'ଣ ଘୋଷଣା କରିବା ପାଇଁ ରୁଜ୍‌ଭେଲଟ୍ ଚର୍ଚ୍ଚିଲଙ୍କ ଉପରେ ଚାପ ପକାଉଥିଲେ ?

(A) ଭାରତୀୟ ମାନଙ୍କ ସହିତ ଯୁଦ୍ଧ ବିଷୟରେ ଆଲୋଚନା ପାଇଁ

(B) ଭାରତକୁ ସ୍ୱାଧୀନତା ପ୍ରଦାନ ସଂପର୍କୀୟ

(C) ଦ୍ୱିତୀୟ ବିଶ୍ୱଯୁଦ୍ଧରେ ଭାରତର ଯୋଗଦାନ ସମ୍ପର୍କରେ

(D) ଭାରତୀୟ ବନ୍ଦୀମାନଙ୍କୁ ମୁକ୍ତ କରିବାର

4. ଚୀନ୍ ଦେଶର ନେତା ମାର୍ଶାଲ୍ ଚିଆଙ୍ଗ୍ କେଉଁ ଉଦ୍ଦେଶ୍ୟରେ ଭାରତ ଆସିଥିଲେ ?

(A) ପରିଭ୍ରମଣ

(B) ଭାରତୀୟ ନେତାଙ୍କୁ ଭେଟିବା

(C) ବଡ଼ଲାଟଙ୍କ ସହିତ ଯୁଦ୍ଧ ବିଷୟରେ ଆଲୋଚନା

(D) ଗାନ୍ଧୀଙ୍କ ସହିତ ସାକ୍ଷାତ

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5. କେଉଁ ଘଟଣାରୁ ଭାରତ ପ୍ରତି ଗ୍ରୁଟ୍‌ଭେଲ୍‌ଟଙ୍କ ମନୋଭାବ ବୁଝିହୁଏ ?

(A) ଚର୍ଚ୍ଚିଲଙ୍କ ଉପରେ ଚାପ ପକାଉଥିବା

(B) ଲୁଇସ୍ ଜନ୍‌ସନ୍‌ଙ୍କୁ ଦୂତ ଭାବେ ଭାରତୀୟ ନେତାଙ୍କ ସହିତ ଆଲୋଚନା ପାଇଁ ପଠାଇବା

(C) ଭାରତର ସ୍ୱାଧୀନତା ସଂଗ୍ରାମକୁ ସମର୍ଥନ ଦେବା

(D) ଭାରତୀୟ ସୈନିକମାନଙ୍କ ଦକ୍ଷତା ଉପରେ ଆସ୍ଥା ରଖିବା

6. ଶୁଦ୍ଧ ଶବ୍ଦଟିକୁ ବାଛ :

(A) ସ୍ୱର୍ଗତଃ

(B) ମାମୁଁ

(C) ଓତପ୍ରୋତ

(D) ସାକ୍ଷୀଗୋପାଳ

7. ବିନ୍ଦୁ ବିନ୍ଦୁ ଜଳ ରହିଛି ଚାରୁ କୁଟିଳ ବାଳେ, ତୁଷାର ବୃଷ୍ଟିକି ହୋଇଛି ନବ ତମାଳ ଦଳେ । - ଏଥିରେ କେଉଁ ଅଳଙ୍କାର ପ୍ରଯୁକ୍ତ ?

(A) ରୂପକ

(B) ଉପମା

(C) ଶ୍ଳେଷ

(D) ଉତ୍‌ପ୍ରେକ୍ଷା

8. ଭାରତୀୟ ସୈନିକମାନଙ୍କର <u>ସାହସ</u> ଅତୁଳନୀୟ । - ରେଖାଙ୍କିତ ଅଂଶଟି କେଉଁ ପଦ ?

(A) ବିଶେଷ୍ୟ

(B) ସର୍ବନାମ

(C) ବିଶେଷଣ

(D) ଅବ୍ୟୟ

9. ଶୋଭିବ ଉଜ୍ଜଳ ସଦ୍ମେ ସଦାଶୟା,
ସରେ ଯଥା ପଦ୍ମ ପଦ୍ମେ ପଦ୍ମାଳୟା । - ଏଥିରେ କେଉଁ ଅଳଙ୍କାର ରହିଛି ?

(A) ଉତ୍‌ପ୍ରେକ୍ଷା

(B) ଯମକ

(C) ଉପମା

(D) ଅନୁପ୍ରାସ

10. ଅକ୍ଷିର ପଛରେ - ସମସ୍ତ ପଦଟି କ'ଣ ହେବ ?

(A) ପରୋକ୍ଷ

(B) ସମକ୍ଷ

(C) ପ୍ରତ୍ୟକ୍ଷ

(D) ବିପକ୍ଷ

11. 'ଯତି ପଡ଼ିବା' ବୃତ୍ତିଟି କେଉଁ ଅର୍ଥରେ ପ୍ରଚଳିତ ?

(A) ମେଳଖାଇବା

(B) ପସନ୍ଦ କରିବା

(C) ବାରମ୍ବାର କହିବା

(D) ଅନ୍ୟହାତରେ ପଡ଼ିବା

12. <u>ଖାଇବାର</u> ପୁତ୍ର ଗଲା ମଥୁରା ପୁରକୁ - ରେଖାଙ୍କିତ ଅଂଶଟି କେଉଁ ପଦ ?

(A) କ୍ରିୟା

(B) ସର୍ବନାମ

(C) ବିଶେଷ୍ୟ

(D) ବିଶେଷଣ

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13. 'ଛଇ ଦେଖାଇବା' ରୂଢ଼ିର ଅର୍ଥ କ'ଣ ?

(A) ବେଶଭୂଷା ହେବା

(B) ଭଙ୍ଗୀ ଦେଖାଇବା

(C) ପରିଷ୍କାର ପରିଚ୍ଛନ୍ନତା

(D) ଛଳନା କରିବା

14. ନିମ୍ନୋକ୍ତ ମଧ୍ୟରୁ କେଉଁଟି ତଦ୍ଧିତାନ୍ତ ଶବ୍ଦ ?

(A) ଗଦ୍ୟ

(B) ଶିଷ୍ୟ

(C) ଧୈର୍ଯ୍ୟ

(D) ଭୃତ୍ୟ

15. ଷଣ୍ଢକୁ ପଘା ନାହିଁ । - ରେଖାଙ୍କିତ ପଦଟି କେଉଁ ବିଭକ୍ତି ?

(A) ଦ୍ୱିତୀୟା

(B) ଚତୁର୍ଥୀ

(C) ପ୍ରଥମା

(D) ତୃତୀୟା

16. 'ସତୀର୍ଥ' - ଏହା କେଉଁ ସମାସ ନିଷ୍ପନ୍ନ ପଦ ?

(A) ବହୁବ୍ରୀହି

(B) କର୍ମଧାରୟ

(C) ତତ୍‌ପୁରୁଷ

(D) ଦ୍ୱିଗୁ

17. କେଉଁ ଶବ୍ଦରେ 'ଷତ୍ୱବିଧି' ନିୟମର ବ୍ୟତିକ୍ରମ ଘଟିନାହିଁ ?

(A) ବସନ୍ତ

(B) ବିସର୍ଗ

(C) ବିସ୍ତାର

(D) ଅନୁସରଣ

18. ଅଶୁଦ୍ଧି ନଥିବା ବାକ୍ୟଟିକୁ ଚିହ୍ନାଅ :

(A) ରଥଯାତ୍ରାରେ ଜନତାମାନଙ୍କର ପ୍ରବଳ ଭିଡ଼ ହୁଏ ।

(B) କୋଣାର୍କର କଳାପାଟବତା ମନମୁଗ୍ଧକର ।

(C) ଅଲିମ୍ପିକ୍ କ୍ରୀଡ଼ା ପ୍ରତିଯୋଗୀତାରେ ଭାରତୀୟ ଦଳ ଏଥର ଅଧିକ ପଦକ ପାଇଛନ୍ତି ।

(D) ଭୁବନେଶ୍ୱର ଓଡ଼ିଶାର ବୃହତ୍ତମ ନଗର ।

19. ମଧୁବାବୁ ଏଣ୍ଟ୍ରାଂସ୍ ପାସ୍ କଲାବେଳକୁ କଲିକତାକୁ ରେଳପଥ ନଥିଲା । - ଏହା କେଉଁ ପ୍ରକାର ବାକ୍ୟ ?

(A) ଜଟିଳ

(B) ଯୌଗିକ

(C) ସରଳ

(D) ମିଶ୍ର

20. କେଉଁ ଶବ୍ଦଟି କୃତ୍ ପ୍ରତ୍ୟୟ 'ଅ' ଯୋଗରେ ଗଠିତ ?

(A) ଜାତ

(B) ଖ୍ୟାତ

(C) ମତ

(D) ଘାତ

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A – SECTION – II
ENGLISH (COMPULSORY)

21. I reached the station after the train _____.

(A) has left

(B) had left

(C) had been left

(D) was leaving

22. The doctor said, "Do you have a headache now ?"

The sentence can be written in indirect speech as :

(A) The doctor asked the patient if he had a headache then.

(B) The doctor asked the patient if he has a headache now.

(C) The doctor asked the patient if he had a headache now.

(D) The doctor asked the patient that he had a headache then.

23. He is a very intelligent boy.

Express the meaning of the sentence in an exclamatory sentence.

(A) What an intelligent boy is he !

(B) What an intelligent boy he is !

(C) How intelligent boy he is !

(D) How intelligent boy is he !

24. The word 'laughed' is pronounced as :

(A) /la:ft/

(B) /la:fd/

(C) /laft/

(D) /lafd/

25. State the correct pronunciation of 'climb'.

(A) /klaim/

(B) /klim/

(C) /klimb/

(D) /kleim/

26. This contract expires _____ December 31st.

(A) on

(B) by

(C) at

(D) in

27. He has spoken to the Headmaster.

The sentence can be written in the passive voice as :

(A) The Headmaster has been spoken.

(B) The Headmaster had been spoken to.

(C) The Headmaster had been spoken.

(D) The Headmaster has been spoken to.

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28. He ordered for a good deal of sacred books.

Rewrite the sentence correctly.

(A) He ordered for a good number of sacred books.

(B) He ordered a good number of sacred books.

(C) He ordered a good deal of sacred books.

(D) He ordered a good number of sacred book.

29. She got _____ her examination all right.

Fill in the blank choosing a correct particle given below.

(A) up

(B) round

(C) through

(D) on

30. Neither the Headmaster nor the teachers _____ present at the meeting.

(A) was

(B) have

(C) were

(D) has

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

Rain supplies most of the water that plants need, but unfortunately it does not always fall at the right time of the year or in sufficient quantities. Plants may stay alive if rain is scarce, but they will not yield such a good harvest of food. Thus, for centuries man has devised methods of supplementing natural supplies of water to his crops by means of irrigation. These methods vary according to the climate, the crops and the available water resources. In tropical and mediterranean countries, water is naturally brought to the crops by a network of surface ditches; this is known as surface irrigation. In surface irrigation water spreads over the surface and soaks into the ground.

Questions :

31. ... but they will not yield.

What does the word 'they' refer to ?

(A) plants

(B) the crops

(C) water resources

(D) these methods

32. What has been devised for centuries ?

(A) Methods of irrigation

(B) Methods to replace natural supplies of water

(C) Methods of supplementing natural supplies of water to the crops by means of irrigation

(D) Methods to supply water to plants in sufficient quantities

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33. What is known as surface irrigation ?
(A) Bringing water to the crops by a network of surface ditches
(B) A network of ditches in tropical countries
(C) A network of ditches in mediterranean countries
(D) Water soaking into the ground

34. What, according to the writer, is an unfortunate thing ?
(A) Rain supplying enough water to the plants
(B) Rain not always falling at the right time of the year
(C) Rain falling in sufficient quantities
(D) Rain being scarce.

35. What is the synonym of 'scarce' ?
(A) adequate
(B) abundant
(C) copious
(D) insufficient

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

She dwelt among the untrodden way
Beside the springs of Dove;
A maid whom there were none to praise
And very few to love.

A violet by a mossy stone
Half-hidden from the eye !
- Fair as a star, when only one
Is shining in the sky.

She lived unknown, and few could know
When Lucy ceased to be;
But she is in her grave, and, oh,
The difference to me.

36. What is the antonym of 'praise' ?
(A) unpraise
(B) impraise
(C) exalt
(D) dispraise

37. Identify which of the following is false.
(A) Lucy lived close to Nature
(B) Lucy was praised by many
(C) Very few people loved Lucy
(D) Lucy lived unknown to many

38. What makes the poet utter the word 'oh' ?
(A) His grief at the death of Lucy
(B) Others' unconcern about Lucy's death
(C) Others' not knowing her
(D) Others' not loving her

39. When Lucy ceased to be ...
The underlined words mean _____.
(A) disappeared from sight
(B) died
(C) stopped working
(D) left the place

40. By comparing Lucy with 'a violet by a mossy stone', the poet is drawing our attention to the _____ of Lucy.
(A) love
(B) beauty
(C) innocence
(D) dignity

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B – SECTION – III
SCIENCE (PCM)
PHYSICS

101424

41. An object is thrown upward with a velocity v. If air drag is not neglected, what can be inferred about the time of ascent (t_a) and time of descent (t_d) for the motion of the object ?

(A) $t_a > t_d$

(B) $t_d > t_a$

(C) $t_a = t_d$

(D) Retardation plays no role in the kinematics of the body

42. The width of the central maximum for a single slit diffraction is greatest for which color of light :

(A) Violet

(B) Blue

(C) Red

(D) Green

43. In Young's double slit experiment the maximum intensity observed is I_0. When one of the slits is closed, the intensity becomes :

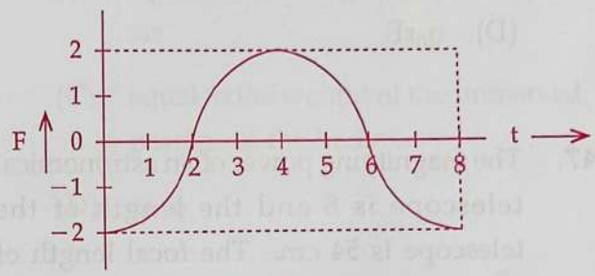
(A) $I_0/4$

(B) $I_0/3$

(C) $I_0/2$

(D) I_0

44. A Force-time (F~t) graph for a linear motion is shown in the figure below. The segments shown are all circular. The linear momentum gained between 0 and 8 seconds is :



(A) -2π N–S

(B) 4π N–S

(C) $+6\pi$ N–S

(D) Zero N–S

45. A dog of mass 'm' stands on one end of a wooden plank of length 'L' and mass 'M'. The plank is floating on water. If the dog walks from one end of the plank to the other end at a constant speed, then the resulting displacement of the plank will be :

(A) $\frac{ML}{m}$

(B) $\frac{mL}{M}$

(C) $\frac{mL}{M+m}$

(D) $\frac{ML}{M-m}$

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46. The electric field strength at a distance 'r' from the centre of a charged sphere of radius R is E. If r > R, how much work will be done in bringing a test charge q_0 from infinity to that point ?

(A) q_0RE

(B) $\frac{1}{2}q_0RE$

(C) $\frac{1}{2}q_0rE$

(D) q_0rE

47. The magnifying power of an astronomical telescope is 8 and the length of the telescope is 54 cm. The focal length of the objective will be :

(A) 6 cm

(B) 48 cm

(C) 64 cm

(D) 8 cm

48. The frequency of a tuning fork A is 3% more than the frequency of a standard fork whereas the frequency of another tuning fork B is 3% less than the standard one. The forks A and B produce 6 beats per second. The frequency of standard fork will be :

(A) 100 Hz

(B) 106 Hz

(C) 103 Hz

(D) 112 Hz

49. Two waves are represented by :

$$Y_1 = a \sin\left(\omega t + \frac{\pi}{6}\right)$$

$$Y_2 = a \cos\omega t$$

The resultant amplitude becomes :

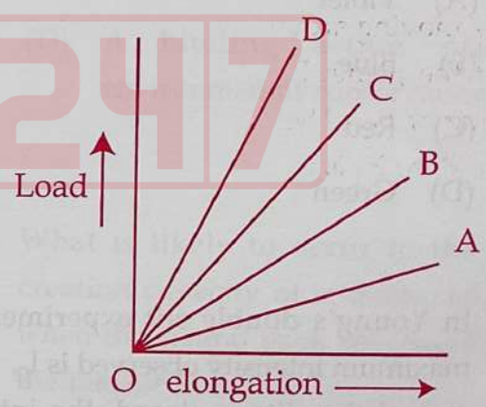
(A) a

(B) $\sqrt{2}$ a

(C) $\sqrt{3}$ a

(D) 2 a

50. The load versus elongation graph for four wires of same material is shown below. The thinnest wire is represented by the line.



(A) OD

(B) OC

(C) OB

(D) OA

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51. A man's near point is 0.5 m and far point is 3 m. Power of the spectacle lenses required for the person to see near and distant objects respectively are :

(A) -2 D and $+3$ D

(B) $+2$ D and -3 D

(C) $+2$ D and -0.33 D

(D) -2 D and $+0.33$ D

52. The ratio of radii of two planets P_1 and P_2 moving around the sun is 4. The mass of the planet P_1 is 32 times heavier than that of P_2. The ratio of escape velocities of P_1 to P_2 is :

(A) 8

(B) $2\sqrt{2}$

(C) $\sqrt{2}$

(D) $\frac{1}{\sqrt{2}}$

53. A body floats in a liquid, with half of its volume in air, contained in a beaker. If the whole system falls freely under gravity then the upthrust on the body due to the liquid is :

(A) equal to the weight of liquid displaced

(B) equal to the weight of the body in air

(C) equal to the weight of the immersed portion of the body

(D) zero

54. If Young's double slit experiment is performed inside water instead of air then :

(A) fringe width would remain unchanged

(B) fringe width would increase

(C) fringe width would decrease

(D) no fringes would be seen

55. The potential energy of a system of three identical charges 1 μC each placed at the vertices of an equilateral triangle of side 10 cm is :

(A) 0.27 J

(B) 2.7 J

(C) 3.7 J

(D) 0.37 J

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56. Two identical parallel plate capacitors of same dimensions joined in series are connected to a D.C. source. When one of the plates of one capacitor is brought closer to the other plate. Which of the following observations will be correct ?

(i) The voltage on the capacitor whose plates come closer is greater than the voltage on the capacitor whose plates are not moved.

(ii) The voltage on the capacitor whose plates come closer is smaller than the voltage on the capacitor whose plates are not moved.

(iii) The voltage on the two capacitors remain equal.

(iv) The applied voltage is divided among the two inversely as the capacitance.

(A) (i) and (iv)

(B) (ii) and (iv)

(C) (iii) and (iv)

(D) (ii), (iii) and (iv)

57. A series combination of an inductor having self inductance L and a resistor with resistance R are connected to a battery of emf E with negligible internal resistance. The final value of current depends on :

(A) L and R

(B) E and L

(C) E and R

(D) L, R and E

58. The average value of current in an AC circuit is 2 amp. An AC ammeter connected to the circuit will show :

(A) $\sqrt{2}\,\pi$ amp

(B) $\frac{\pi}{\sqrt{2}}$ amp

(C) $2\sqrt{2}\,\pi$ amp

(D) $\frac{\pi}{2\sqrt{2}}$ amp

59. A charge of 1 coulomb moves in a circle at 10 revolutions per second. The radius of the circle is 2×10^{-6} m. Magnetic field at the centre of the circle is :

(A) $\frac{\pi}{10}\,N-A^{-1}\,m^{-1}$

(B) $\frac{\pi}{5}\,N-A^{-1}\,m^{-1}$

(C) $\pi\,N-A^{-1}\,m^{-1}$

(D) $\frac{\pi}{100}\,N-A^{-1}\,m^{-1}$

60. A (100 W, 200 V) electric bulb is connected to a 160 Volts supply. The power consumption would be :

(A) 64 W

(B) 80 W

(C) 100 W

(D) 125 W

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B - SECTION - III
SCIENCE (PCM)
CHEMISTRY

61. Which of the following shows positive inductive effect ?
(A) $-NO_2$
(B) $-COOH$
(C) $-OCH_3$
(D) $-CN$

62. According to Le-Chatelier's principle maximum yield of ammonia is obtained at :
(A) High temperature and low pressure
(B) High pressure
(C) Low temperature
(D) Low temperature and High pressure

63. The refining of Nickel metal is done by :
(A) Van Arkel Method
(B) Mond process
(C) Vapour-phase refining
(D) Zone refining

64. 50 ml of H_2 diffuses out through a small hole from a vessel in 20 mins. The time needed for 40 ml of O_2 to diffuse out from the same vessel is :
(A) 12 min
(B) 64 min
(C) 8 min
(D) 32 min

65. The volume of 0.05 N H_2SO_4 solution needed to completely neutralise 25 ml of 0.1 N NaOH solution is :
(A) 25 ml
(B) 50 ml
(C) 100 ml
(D) 12.5 ml

66. Which of the following ion is the smallest in size ?
(A) N^{3-}
(B) Na^+
(C) F^-
(D) O^{2-}

67. Among the following covalent compounds, the compound having more polar character is :
(A) HI
(B) HCl
(C) HBr
(D) HF

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68. The relative lowering in vapour pressure of an ideal solution containing the non-volatile solute is equal to the mole fraction of the solute at a given temperature. This law is known as :

(A) Henry's law

(B) Van't Hoff's law

(C) Raoult's law

(D) Ostwald's dilution law

69. One drop of water weighs 0.018 g. Number of water molecules present in one drop of water is :

(A) 1×10^{-3}

(B) 6.02×10^{20}

(C) 22.4×10^{-3}

(D) $6.02 \times 3 \times 10^{2}$

70. The oxide of a metal contains 40% oxygen. If the valency of the metal is 3, its atomic mass will be :

(A) 8

(B) 16

(C) 36

(D) 24

71. The uncertainty in the momentum of an electron is 1×10^{-5} kg m/s. The uncertainty in its position will be ($h = 6.62 \times 10^{-34}$ kg m^2/s) :

(A) 1.05×10^{-28} m

(B) 1.05×10^{-26} m

(C) 5.27×10^{-30} m

(D) 5.27×10^{-28} m

72. The correct order of electron gain enthalpy among the following is :

(A) F > Cl > Br

(B) Br > Cl > F

(C) Cl > F > Br

(D) F > Br > Cl

73. The set of quantum numbers for 19th electron of Chromium atom is :

	n	l	m	s
(A)	3	0	0	½
(B)	3	2	−2	½
(C)	4	0	0	½
(D)	4	1	0	½

74. Which of the following is an electrophile ?

(A) H_2O

(B) NH_3

(C) $AlCl_3$

(D) CH_3NH_2

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75. The ore containing two different metals is :

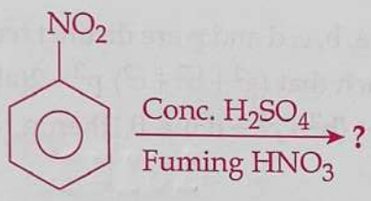
(A) Haematite

(B) Galena

(C) Copper pyrite

(D) Magnetite

76. What will be the product of the following reaction ?



(A) m-dinitrobenzene

(B) o-dinitrobenzene

(C) p-dinitrobenzene

(D) Both o- and p-dinitrobenzene

77. According to VSEPR theory the shape of SF_6 molecule is :

(A) Trigonal bipyramidal

(B) Regular octahedral

(C) Pentagonal bipyramidal

(D) Tetrahedral

78. When acetylene is passed through dil.H_2SO_4 in presence of $HgSO_4$ at 60°C, the organic compound formed is :

(A) Dimethylether

(B) Acetone

(C) Acetic acid

(D) Acetaldehyde

79. In the standardisation of $Na_2S_2O_3$ using $K_2Cr_2O_7$ by iodometry, the equivalent mass of $K_2Cr_2O_7$ is :

(A) $\frac{\text{Mol.Mass}}{2}$

(B) $\frac{\text{Mol.Mass}}{3}$

(C) $\frac{\text{Mol.Mass}}{6}$

(D) Same as molecular mass

80. ZnS is not precipitated by passing H_2S through acidified $ZnCl_2$ solution, but CuS is precipitated by passing H_2S through acidified $CuSO_4$ solution. The reason for this is :

(A) K_{sp} CuS >> K_{sp} ZnS

(B) K_{sp} CuS = K_{sp} ZnS

(C) K_{sp} CuS << K_{sp} ZnS

(D) None of these

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B – SECTION – III
SCIENCE (PCM)
MATHEMATICS

81. If the quadratic equation $ax^2+bx+c=0$ has $\frac{\sqrt{2}+1}{\sqrt{2}-1}$ as one root of it and $a=2$, then what is the equation in standard form ?

(A) $x^2-6x+1=0$

(B) $2x^2-x+1=0$

(C) $x^2-\sqrt{2}x+\sqrt{2}=0$

(D) $\sqrt{2}x^2-3x+\sqrt{2}=0$

82. Let A and B be two sets. Then $(A\cup B)'\cup(A'\cap B)$ is equal to :

(A) A'

(B) A

(C) B'

(D) None of these

83. If $x=2+\sqrt{3}$, find the value of $x^2+\frac{1}{x^2}$.

(A) 12

(B) 14

(C) 16

(D) 18

84. R is a relation over the set of real numbers and it is given by $mn\geq 0$. Then R is :

(A) Symmetric and transitive

(B) A partial order relation

(C) Reflexive and symmetric

(D) An equivalence relation

85. Let $A=\{x|-1<x<1\}=B$. If $f: A\to B$ is bijective then a possible definition of $f(x)$ is :

(A) $|x|$

(B) $x|x|$

(C) $\sin\pi x$

(D) None of these

86. If a, b, c, d and p are distinct real numbers such that $(a^2+b^2+c^2)p^2-2(ab+bc+cd)p+(b^2+c^2+d^2)\leq 0$, then a, b, c, d are in :

(A) A.P.

(B) G.P.

(C) H.P.

(D) Logarithmic series

87. Evaluate the right hand limit of the function :

$$f(x)=\begin{cases}\frac{|x-4|}{x-4}, & x\neq 4\\ 0, & x=4\end{cases} \quad \text{at } x=4$$

(A) -1

(B) 1

(C) 0

(D) does not exist

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88. The number of terms common between series $1+2+4+8+$ ..... to 100 terms and $1+4+7+10+$..... to 100 terms is :

(A) 6

(B) 4

(C) 5

(D) None of these

89. Let G be a group. If H is a subgroup of G with order H and index of H in G is 7, then order of group G must be :

(A) 154

(B) 18

(C) 77

(D) 1078

90. Differentiate $2\log_2 x$ with respect to x.

(A) $2e^x$

(B) $\log_2 x + 1$

(C) $\log_2 x$

(D) 1

91. The foot of the perpendicular on the line $3x+y=\lambda$ drawn from the origin is C. If the line cuts the X-axis and Y-axis at A and B respectively then BC : CA is :

(A) 1 : 3

(B) 3 : 1

(C) 1 : 9

(D) 9 : 1

92. Find the mean deviation from the mean for the data 6, 7, 10, 12, 13, 4, 8, 20.

(A) 10

(B) 3

(C) 3.75

(D) 8.6

93. Two dice are thrown simultaneously. Find the probability of getting a multiple of 2 on one dice and a multiple of 3 on the other dice.

(A) $\frac{1}{12}$

(B) $\frac{1}{3}$

(C) $\frac{11}{36}$

(D) $\frac{1}{4}$

94. The equation of the plane passing through the line $\frac{x-1}{2} = \frac{y+1}{-1} = \frac{z}{3}$ and parallel to the direction where direction numbers are 3, 4, 2 is :

(A) $14x-5y-11z=19$

(B) $3x+4y+2z+1=0$

(C) $2x-y+3z=3$

(D) None of these

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95. The diagonals of a parallelogram PQRS are along the lines $x+3y=4$ and $6x-2y=7$. Then PQRS must be a :

(A) Rectangle

(B) Square

(C) Cyclic Quadrilateral

(D) Rhombus

96. Solve :

$\tan^2\theta + (1-\sqrt{3})\tan\theta - \sqrt{3} = 0$

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

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

(C) $\frac{\pi}{6}$

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

97. If $\tan^2\theta = 2\tan^2\phi + 1$, then $\cos 2\theta$ is equal to :

(A) $\sin^2\phi$

(B) $-\sin^2\phi$

(C) $\tan^2\phi$

(D) $-\cot^2\phi$

98. The diameter of a sphere is decreased by 25%. By what percent does its surface area decrease ?

(A) 25

(B) 52.75

(C) 37.25

(D) 43.75

99. $\begin{vmatrix} 0 & p-q & p-r \\ q-p & 0 & q-r \\ r-p & r-q & 0 \end{vmatrix}$ is equal to :

(A) $p+q+r$

(B) 0 · 101424

(C) $p-q-r$

(D) $-p+q+r$

100. There are two cones. The curved surface area of one is twice that of the other. The slant height of the later is twice that of the former. Find the ratio of their radii.

(A) 2 : 1

(B) 4 : 1

(C) 3 : 2

(D) 4 : 3

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C - SECTION - IV

CHILD DEVELOPMENT, PEDAGOGY, SCHOOL MANAGEMENT & EVALUATION

101. Which one of the following assessment practices will bring out the best in students ?

(A) When students are required to reproduce facts as tested via multiple choice questions.

(B) When the emphasis is laid upon positive correlation between test scores and student ability.

(C) When the marks obtained and the position secured by the student in the class are the ultimate determinants of success.

(D) When conceptual change and students alternative solutions are assessed through several different methods of assessment.

102. Which one of the following situations is illustrative of a child centred classroom ?

(A) A class in which the teacher dictates and students are asked to memorise the notes.

(B) A class in which the textbook is the only resource the teacher refers to.

(C) A class in which the behaviour of students is governed by the rewards and punishments the teacher would given them.

(D) A class in which the students are sitting in groups and the teacher take turns to go to each group.

103. Score based on statistical comparison of individual's performance with the performance of others in that age group is _____.

(A) Intelligence Quotient

(B) Deviation IQ

(C) Fluid Intelligence

(D) Crystallized Intelligence

104. Behaviour is the movement of an organism or its parts in a frame of reference provided by the organism itself or by external objects or fields of force. Which theory of learning does it belong to ?

(A) Stimulus - Response Theory

(B) Theory of Systematic Behaviour

(C) Theory of Conditional Response

(D) Operant Conditioning Theory

105. According to whom, a short answer essay item is one in which the examinee supplies the answer in one or two lines and is usually concerned with one central concept ?

(A) Marshall & Hales

(B) Linn & Miller

(C) Gronlund

(D) NCF-2005

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106. A grading system in which teachers base assessment decisions about an individual's work on comparisons with the work of peers is classified as :

(A) Norm-referenced grading

(B) Criterion-referenced grading

(C) Competitive grading

(D) None of these

107. Which of the following is not the characteristics of formative evaluation ?

(A) Its design is exploratory and quite flexible

(B) It seeks to identify influential variables

(C) It monitors teaching learning strategy during instructions

(D) It is almost unobstructive and non-reactive

108. To which of Kohlberg's stages, empathy and prosocial behaviours are most closely related ?

(A) Pre Conventional Ethics

(B) Conventional Ethics

(C) Post Conventional Ethics

(D) None of these

109. In this world of human affairs there is no worse nuisance than a boy at the age of fourteen. If he talks with a childish lisp, he is called a baby; and if he answers in a grown up way, he is called an impertinent whose view was it ?

(A) Rabindra Nath Tagore

(B) Mahatma Gandhi

(C) Sri Aurobindo

(D) S. Radhakrishnan

110. Condition involving a range of motor or coordination difficulties due to brain damage is known as :

(A) Epilepsy

(B) Spasticity

(C) Cerebral Palsy

(D) Articulation disorders

111. Which of the following is not a guideline for encouraging creativity ?

(A) Ask students to support dissenting opinions

(B) Use a class brainstorming session whenever possible

(C) Give ungraded assignments from time to time

(D) Don't reinforce a pattern of telling "Secrets"

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112. According to Psychoanalytic theory of motivation which of the following is true ?

(A) Man's behaviour is directed by his will and that the will is motivated by intellectual evaluation.

(B) Motivation is an element of the highest importance in the process of learning.

(C) Human behaviour is inspired by the desires lying concealed in the unconscious and subconscious mind of the individual.

(D) Emphasized that motivation to work is rooted from physiological to self-actualisation needs.

113. School Based Management is a way for forcing individual schools to take responsibility for what happens to the children under their jurisdiction - was the view of _____.

(A) Malen

(B) Hausman

(C) Candoli

(D) Hallinger

114. In which type of educational management teachers get proper scope for evaluating the assignments entrusted upon them ?

(A) Creative Management

(B) Laissez Faire Management

(C) Decentralised Management

(D) Democratic Management

115. The prompting method of memory testing is created by :

(A) H. Munsterburg

(B) H. Ebbinghaus

(C) Ephrussi

(D) Pholman

116. At which phase a child cannot solve a problem alone but can be successful under adult guidance or in collaboration with a more advanced peer ?

(A) Zone of Proximal Development (ZPD)

(B) Zone of Actual Development (ZAD)

(C) Information Processing

(D) Meta Cognition

117. Continuous and Comprehensive evaluation emphasises :

(A) How learning can be observed, recorded and improved upon

(B) Continuous testing on a comprehensive scale to ensure learning

(C) Fine tuning of tests with the teaching

(D) Redundancy of the board examination

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118. Which assessment involves students in the collection and evaluation of materials to be included for examination ?

(A) Check List

(B) Portfolio

(C) Rating Scale

(D) Rubrics

119. Which part of the brain is involved in higher cognitive process ?

(A) Cerebellum

(B) Cerebral cortex

(C) Midbrain

(D) Pons

120. Which of the following is not a characteristic of critical pedagogy ?

(A) To empower students and help them to help themselves

(B) To subjugate students by oppression

(C) To promote emancipation and intellectual growth

(D) To center its practice on community and collaboration

121. "Although approximate chronological ages are attached to the stages, children pass through them at different rates" - whose theory of development helps us to understand this statement ?

(A) Robert S. Sear

(B) Vygotsky

(C) Piaget

(D) Erikson

122. A child reasons 'you do this for me and I'll do that for you'. In which stage of Kohlberg's moral reasoning would this child fall ?

(A) The 'good boy-good girl' orientation

(B) The social-contract orientation

(C) The instrumental purpose orientation

(D) The punishment and obedience orientation

123. Ongoing process of arranging information and experience into mental system or categories is known as :

(A) Assimilation

(B) Accommodation

(C) Organization

(D) Equilibration

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124. All of the following promote assessment as learning except :
(A) Telling students to take internal feedback
(B) Generating a safe environment for students to take chances
(C) Tell students to reflect on the topic taught
(D) Testing students as frequently as possible

125. Which one of the following is a good example of learning of a problem solving task till the students able to do it by themselves ?
(A) Offering a reward for solving the problem quickly
(B) Telling them that they can do it by trying again and again
(C) Providing a half solved example
(D) Telling them they can't go home till they solve the problem

126. The following are the main objectives of International Conference on Educational Planning held at Paris in 1968 except :
(A) To examine critically the experiences of educational planning over the past ten years.
(B) To assess major tendencies and problems with which educational planning is likely to have to deal in the next ten years.
(C) To assess co-operative learning groups and difficulties of implementing multiage education.
(D) To develop practical guidelines for helping individual nations.

127. There should be more varied modes of assessment beyond the examination hall paper pencil test, was the recommendation of :
(A) NEP - 2020
(B) NCF - 2005
(C) NPE - 1986
(D) Revised NPE - 1992

128. Who is the founder of critical pedagogy ?
(A) Paulo Freire
(B) Paul Willis
(C) Ira Shor
(D) Shirley Steinberg

129. Rousseau's theory on adolescence was criticised by the psychologists, because :
(A) It was not purely philosophic in nature
(B) It was not based on observation and experiments
(C) He was a devoted parent
(D) He did not analyse the self-expression of children

130. Which of the following is a guideline for the teachers to deal with the learning disabled students ?
(A) Breaking assignments into very small steps
(B) Make sure students are being reinforced for their successes
(C) Work on the learning problem directly
(D) All of the above

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131. A scale with a set of points which describe varying degrees of the dimension of an attribute under observation is known as :

(A) Aptitude scale

(B) Rating scale

(C) Attitude scale

(D) Questionnaire & schedules

132. According to Piaget, the ability to infer a relationship between two objects based on knowledge of their relationship with a third object, develop at which stage ?

(A) Sensori motor

(B) Pre-Operational

(C) Concrete Operational .

(D) Formal Operational

133. Which of the following does not contain School Development Plan estimates ?

(A) Physical requirement of additional infrastructure and equipments over the three year period.

(B) Classwise enrolment for three years.

(C) Training requirement of teachers.

(D) Free textbooks and additional costs as per the specifications in schedule.

134. Whose name is strongly associated with the apparatus of puzzle box ?

(A) Skinner

(B) Pavlov

(C) Thorndike

(D) Tolman

135. NCTE as a statutory body came into existence in pursuance of the NCTE Act-1993 on the _____.

(A) 17th August 1993

(B) 17th August 1995

(C) 5th September 1995

(D) 10th December 1994

136. The essay test possesses relatively low validity and reliability because of the following factors except :

(A) It can be assessed only by a teacher or competent professionals

(B) It may not provide a true picture of the comprehension level of the learner

(C) The learners focus on learning broad concepts and articulating relationship

(D) Good verbal ability even in the absence of relevant points

137. Assessment for learning takes into account the followings except :

(A) Qualitative improvement in learning

(B) Learning styles of students

(C) Develops personal social skills

(D) Mistakes and strengths of students

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138. Who has suggested that people are motivated by a hierarchy of needs, beginning with basic psychological requirements and moving upto the need for self-fulfillment ?

(A) J. Atkinson

(B) Kelly

(C) Maslow

(D) B. Weiner

139. Characterization by value, which is one of the objective of Bloom's taxonomy, comes within which domain ?

(A) Cognitive

(B) Affective

(C) Psychomotor

(D) None of these

140. Which of the following is a physical/ material resource for education ?

(A) Intellectual properties

(B) Sponsorships

(C) Alumni

(D) Endowments

141. In MCQ item, the problem part is called as :

(A) Direction

(B) Foils

(C) Stem

(D) Distractor

142. Which of the following is the main objective of continuous assessment ?

(A) To find out the extent to which the objectives have been achieved

(B) To discover how far the learning experiences in the classroom have proved effectively

(C) To learn how successfully the aims of education have been fulfilled

(D) To help the learners to understand their progress in learning

143. What do you mean by Rule-Eg method ?

(A) Teaching or learning by moving from specific examples to general rules.

(B) Teaching or learning by moving from general principles to specific examples.

(C) Making imaginative leaps to correct perceptions.

(D) Teachers present material in complete, organised form, moving from broadest to more specific concepts.

144. Role of teachers for the development of critical pedagogy is/are :

(A) Collaborative and co-operative learning

(B) Promote good citizen quality for future society

(C) Development of capabilities of learners

(D) All of the above

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145. "Motivation is the stimulation of actions towards a particular objective where previously there was little or no attraction to that goal". This definition was given by :

(A) W.A. Kelly

(B) T.W. Atkinson

(C) F.G. McDonald

(D) H.W. Bernard

146. Organising pre-service and in-service training of teachers; develop and disseminate innovative educational techniques and practices are the objectives of which organisation ?

(A) NCTE

(B) NCERT

(C) Central Advisory Board of Education

(D) NIEPA

147. Which of the following is not a characteristic of Blue Print ?

(A) Weightage are given to objectives and contents

(B) Weightage to form of questions in terms of marks

(C) A two dimensional chart

(D) It produces a link between test items and paper setters policy decisions

148. Which of the following is a benefit of peer assessment ?

(A) It can assist in deepening the student's own perception.

(B) It helps narrowing the gap between one's imagined view of teaching and what actually occurs.

(C) It helps students towards understanding the observation process.

(D) It makes a student to become more independent learner.

149. Which of the following is not a guideline for the teachers to develop problem solving qualities of learners ?

(A) Ask the students if they are sure they understand the problem

(B) Encourage attempts to see the problem from different angles

(C) Pose a question and let students try to find the answer

(D) Teach heuristics

150. According to McDougall's view Negative self-feeling is associated with which of the following instincts ?

(A) Submission

(B) Acquisition

(C) Self assertion

(D) Repulsion

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