



## NDA 2 2023 Most Exceeded Question

### IDIOMS & PHRASES

Directions: Given below are some idioms/phrases followed by four alternative meanings for each. Choose the most appropriate answer from among the options (a), (b), (c) or (d).

1. Overstep the mark
  - (a) To tell people how successful you are
  - (b) To step into someone else's areas of expertise
  - (c) To upset someone by doing/saying more than you should
  - (d) To do something in an excited way
2. Palsy-walsy friends
  - (a) Good friends
  - (b) Friends who help each other in difficult situations
  - (c) Friends by choice, and not by chance
  - (d) Unfriendly
3. Open a Pandora's box
  - (a) To do something that causes a lot of new problems that you did not expect
  - (b) To do something out of compulsion
  - (c) To do something beyond expectation
  - (d) To do something out of the box, that causes awards and ceremonies for you
4. Pull your socks up
  - (a) To get well-dressed for the occasion
  - (b) Improve your work or behaviour
  - (c) To speak in an honest way without hesitation
  - (d) To be in control of an organization, often secretly
5. To get under somebody's skin
  - (a) To deceive someone
  - (b) To admire someone
  - (c) To annoy someone
  - (d) To support someone
6. Turn topsy-turvy
  - (a) To completely change something
  - (b) To completely evaluate something

- (c) To enjoy yourself greatly
- (d) To exhaust yourself completely

7. A clarion call
  - (a) A trumpet call
  - (b) An intimidating voice
  - (c) A strong request
  - (d) An urgent order
8. Fire in the belly
  - (a) Fear and hatred
  - (b) Powerful ambition
  - (c) Love and dedication
  - (d) Lethargy and indifference
9. A hunky-dory situation
  - (a) There are serious issues among people
  - (b) There are no problems and people are happy
  - (c) There is war and bloodshed all over
  - (d) There is no work, only enjoyment
10. Give somebody a leg up
  - (a) To pull someone down
  - (b) To deceive and betray someone
  - (c) To help someone for their livelihood
  - (d) To help someone to be successful

### ANTONYM

Directions: Each item in this section consists of a sentence with an underlined word followed by four words, (a), (b), (c) and (d). Select the option that is opposite in meaning to the underlined word and mark your response in your Answer Sheet accordingly.

11. His opinion is lopsided.
  - (a) Partial
  - (b) Crooked
  - (c) Unequal
  - (d) Balanced
12. His work is praiseworthy.
  - (a) Admirable
  - (b) Condemnable
  - (c) Commendable
  - (d) Creditable
13. His deeds had retrograde results.

- (a) Progressive (b) Negative (c) Happiness (d) Ability  
 (c) Retreating (d) Reverse
14. He always offers palatable solutions.  
 (a) Acceptable (b) Agreeable (c) Honesty (d) Absenteeism  
 (c) Unacceptable (d) Pleasant
15. His views on the subject are microscopic  
 (a) Broad-based (b) Minute (c) Criminal (d) Friendly  
 (c) Precise (d) Fine
16. He is always obdurate in his behaviour towards other people  
 (a) Greed (b) Desire (c) Trust (d) Dignity  
 (a) Flexible (b) Callous (c) Insensible (d) Obnoxious
17. Mohan always had profound respect for Sohan.  
 (a) Deep (b) Extreme (c) Sincere (d) Superficial
18. We were living in turbulent times.  
 (a) Destructive (b) Unstable (c) Construction (d) Beautiful  
 (c) Calm (d) Stormy
19. Amit is a dogmatic person.  
 (a) Assertive (b) Amenable (c) Humility (d) Humbleness  
 (c) Bold (d) RIGID
20. Sachin is very fickle in his behaviour.  
 (a) Stable (b) Capricious (c) Difficult (d) Unsuitable  
 (c) Mercurial (d) Vacillating
23. His truancy is detrimental.  
 (a) Loyalty (b) Integrity (c) Honesty (d) Absenteeism
24. He is a maleficent person.  
 (a) Generous (b) Cunning (c) Criminal (d) Friendly
25. He solemnity is celebrated.  
 (a) Greed (b) Desire (c) Trust (d) Dignity
26. His bounty is limitless.  
 (a) Benevolence (b) Gallantry (c) Nepotism (d) Chivalry
27. The Holocaust was experienced by millions.  
 (a) Celebration (b) Destruction (c) Construction (d) Beautiful
28. His aversion is known to all  
 (a) Hospitality (b) Hostility (c) Humility (d) Humbleness
29. To be able to decipher something is wonderful.  
 (a) Decode (b) Encode (c) Simulate (d) Animate
30. It is the opportune time to think about investment in the real estate sector.  
 (a) Honorary (b) Appropriate (c) Difficult (d) Unsuitable

## SYNONYMS

Directions: Each item in this section consists of a sentence with an underlined word followed by four words, (a), (b), (c) and (d). Select the option that is nearest in meaning to the underlined word and mark your response in your Answer Sheet accordingly.

21. He is essentially a lowbrow person.  
 (a) Coarse (b) Proud (c) Passionate (d) Pathetic
22. His nostalgia is deep.  
 (a) Excitement (b) Longing

## SPOTTING THE ERROR

Directions: Each item in this section has a sentence with three underlined parts labelled (a), (b) and (c). Read each sentence to find out whether there is any error in any underlined part. Indicate your response in the Answer Sheet against the corresponding letter i.e. (a) or (b) or (c). If you find no error, your response should be indicated as (d).

31. She has been working on (a)/ the issue from a long time (b)/ but is still not able to solve it. (c) No error (d)

32. A shudder ran to Anjali's spine (a)/ when she recalled the accident (b)/ in which she was luckily saved. (c) No error (d)
33. Supposing if the Directors (a)/ doesn't arrive in time for the Board Meeting, (b)/ what will you do? (c) No error (d)
34. Whatever assignment (a)/ that which you take, (b)/ put your best efforts in it. (c) No error (d)
35. And though one did not (a)/ quite believe her plea, one saw no harm (b)/ in granting her permission. (c) No error (d)
36. If the work would have been (a)/ properly assigned, it would have taken (b)/ much less time in completion. (c) No error (d)
37. The money lender (a)/ handed over a hundred (b)/ rupees note to the borrower. (c) No error (d)
38. The furious woman walked hurriedly (a)/ into the congested room (b)/ and shouted loud at the visitors. (c) No error (d)
39. Mathematics and Accountancy (a)/ are more easier than (b)/ History and Geography. (c) No error (d)
40. The bike flew off the road (a)/ and fell into the valley (b)/ because Amit was driving faster. (c) No error (d)
41. although the temperature of this layer of the (P) when directly comparing the satellite (Q) measurements of temperature (R) atmosphere should generally track the surface temperature, we must be careful (S)  
(a) P R Q S (b) P S Q R  
(c) S Q R P (d) P Q R S
42. the element heats up, (P) eventually reaching high temperatures (Q) glowing like a dark orange that radiates (R) the visible range, (S)  
(a) P Q S R (b) Q P S R  
(c) S Q R P (d) P R S Q
43. Two people argue about why Venus is so much warmer (P) to the Sun, so it absorbs more solar energy. The second argues (Q) that it's because Venus has a thick, greenhouse-gas rich atmosphere (R) than the Earth. The first argues that it's because Venus is closer (S)  
(a) P S Q R (b) Q R P S  
(c) S Q R P (d) P Q R S
44. are now used by more than a thousand firms (P) and are growing in popularity (Q) in the United States and Europe (R) gain sharing-plans (S)  
(a) P R Q S (b) Q R P S  
(c) P R S Q (d) S P R Q
45. adversity without succumbing (P) to the clouds of doubt and jealousy (Q) between friends which is subjected to both prosperity and (R) the essay 'Of Friendship' by Francis Bacon celebrated the intimacy (S)  
(a) P R Q S (b) Q R P S  
(c) S R P Q (d) P Q R S
46. friends without which the world is (P) make friends and a person wills to want true (Q) it is miserable solitude that compels a person to (R) nothing other than a place of wilderness (S)  
(a) P R Q S (b) Q R P S  
(c) R Q P S (d) P Q R S
47. takes the longest (P) that never started (Q) the job (R) to finish (S)  
(a) P R Q S (b) R Q P S  
(c) S Q R P (d) P Q R S
48. To what you can create (P) control, shift your energy (Q) instead of worrying about (R)

#### ORDERING OF WORDS, SENTENCES

Directions: In this section, each passage consists of six sentences. The first and the sixth sentences are given in the beginning as S1 and S6. The middle four sentences in each have been removed and jumbled up. These are labelled P, Q, R and S. You are required to find out the proper order for the four sentences and mark accordingly on the Answer Sheet.

41. Several years ago, (P)  
Course on climate change at Texas A & M University (Q)  
Professor Andrew Dessler created an introductory (R)  
for freshmen and sophomores (S)  
(a) P R Q S (b) Q R P S  
(c) S Q R P (d) P Q R S
42. I realize that solving the climate change problem (P)  
than solving (Q)  
will be much harder (R)  
the ozone depletion problem (S)  
(a) P R Q S (b) Q R P S  
(c) S Q R P (d) P Q R S
49. takes the longest (P)  
that never started (Q)  
the job (R)  
to finish (S)  
(a) P R Q S (b) R Q P S  
(c) S Q R P (d) P Q R S
50. To what you can create (P)  
control, shift your energy (Q)  
instead of worrying about (R)

- what you cannot (S)  
 (a) P R S Q (b) Q R S P  
 (c) S Q R P (d) R S Q P
51. What are cold-blooded animals?/ BaMs [kwu okys tkuoj D;k gSa\  
 (a) Animals with blood without haemoglobin/ fcuk gheksXyksfcu okys jä okys tkuoj  
 (b) Animals who are not ferocious/ tkuoj tks Øwj ugha gSa  
 (c) Animals whose body temperature remains constant/ ,sls tkuoj ftuds 'kjhj dk rkieu fLFkj jgrk gS  
 (d) Animals whose body temperature varies according to the temperature of atmosphere/ ,sls tkuoj ftuds 'kjhj dk rkieu okrkj.k ds rkieu ds vuqlj cnryk jgrk gS
52. Who discovered antibiotic producing fungus from Penicillium genes?/ isfuffy;e thu ls ,aVhck;ksfVd mRiUu djus okys dod dh [kkst fdlus dh\  
 (a) Louis Pasteur / yqbZ ik'pj  
 (b) Sir Alexendar Fleming/ lj ,ysDtsaMj ¶ysfeax  
 (c) Stanley Prusiner/ LVsuyh çwfluj  
 (d) Robert Hook/ j,cVZ gqd
53. Who proposed cell theory?/ dksf'kdk fl)kar dk çfriknu fdlus fd;k\  
 (a) Robert Hooke / j,cVZ gqd  
 (b) Robert Brown/ j,cVZ czkmu  
 (c) Schleiden and Schwann/ LysMsu vkSj 'oku  
 (d) Watson and Crick/ o,Vlu vkSj fØd
54. Carbohydrates are stored in animals and plants in the form of/ tkuojksa vkSj ikS/kksa esa dkcksZgkbM<sup>a</sup>sV fdl :i esa laxzfgR gksrs gSa\  
 (a) Cellulose and glucose, respectively/ Øe'k% lsY;qykst vkSj Xywdkst  
 (b) Starch and glycogen, respectively/ Øe'k% LVkpZ vkSj Xykbdkstu  
 (c) Starch and glucose, respectively/ Øe'k% LVkpZ vkSj Xywdkst  
 (d) Cellulose and glycogen, respectively/ Øe'k% lSywykst vkSj Xykbdkstu
55. Fusiform roots are found in/ ¶;wlhQ,eZ tM+sa ikbZ tkrh gSa  
 (a) Solanum tuberosum/ lksysue Vîwcjksle  
 (b) Dacus carota / MSdl dSjksVk  
 (c) Raphanus sativus/ jQkul ISfVol  
 (d) Colocasia/ dksyksdSfl;k
56. Which of the following is not a purpose of transpiration?/ fuEufyf[kr esa ls dkSu lk ok"iksRltZu dk mís'; ugha gS\  
 (a) Supplies water for photosynthesis/ çdk'k la'ys"k.k ds fy, ikuh dh vkiwfrZ djrk gS  
 (b) Helps in transportation of water/ ty ifjogu esa enn djrk gS  
 (c) Cools leaf surface/ iÙkh dh lrg dks BaMk djrk gS  
 (d) Maintains shape and structure of plant/ ikS/ks ds vkdkj vkSj lajpuk dks cuk, j[krk gS
57. Which one among the following is a plant hormone?/ fuEufyf[kr esa ls dkSu lk ,d ikni gkeksZu gS\  
 (a) Insulin / balqfyu  
 (b) Thyroxin/ Fkk;jksfDlu  
 (c) Gibberellin / fxcjsfyu  
 (d) Oestrogen/ ,LV<sup>a</sup>kstu
58. In which part of alimentary canal fatty acids are absorbed? / vkgkj uky ds fdl Hkkx esa QSVh ,fIM vo'kksf"kr gksrs gSa\  
 (a) Duodenum / MqvksMsue  
 (b) Oesophagous/ ,lksQSxl  
 (c) Ileum / bfy;e  
 (d) Stomach / isV

59. The part responsible for coughing is / [kkalh ds fy, mÜkjnk;h vax gS

(a) Hindbrain / fgaMczsu

(b) Midbrain / feMczsu

(c) Spinal cord / jh<+ dh gih

(d) Medulla oblongata/ esMqyk v,cksaxVk

60. Which endocrine gland requires iodine to synthesise a particular hormone, whose deficiency may cause goitre disease? / fdl var%lzkoh xzafFk dks ,d fo'ks"kgkeksZu dks la'ysf"kr djus ds fy, vk;ksMhu dh vko';drk gksrh gS] ftldh deh ls ?ksa?kk jksx gks ldrk gS\

(a) Hypothalamus/ gkbiksFkSysel

(b) Pancreas/ vXU;k'k;

(c) Thymus / Fkkbel

(d) Thyroid gland / Fkk;j;M xzafFk

61. Which of the following is a true statement about the physical change? / HkkSfrd ifjorZu ds ckjs esa fuEufyf[kr esa ls dkSu lk dFku lgh gS\

(a) Physical changes are temporary changes and can be reversed / HkkSfrd ifjorZu vLFkk;h ifjorZu gSa vksj bUgsa myVk fd;k tk ldrk gS

(b) During physical changes the composition of constituent's molecule changes. / HkkSfrd ifjorZuksa ds nksjku ?kVd ds v.kq dh lajpuk cny tkrh gSA

(c) Energy is absorbed or released during a physical change / HkkSfrd ifjorZu ds nksjku ÅtkZ vo'kksf"kr ;k tkjh gksrh gS

(d) Identity of the substance is lost after the physical change / HkkSfrd ifjorZu ds ckn inkFkZ dh igpku [kks tkrh gS

62. Which of the following is a chemical change? / fuEufyf[kr esa ls dkSu lk jklk;fud ifjorZu gS\

(a) Heating of iron to red hot / yksgs dks yky xeZ djuk

(b) Magnetisation of iron piece/ yksgs ds VqdM+s dk pqacdh;dj.k

(c) Rusting of iron / yksgs ij tax yxuk

(d) All of the above/ mijksä IHkh

63. Which one of the following is most abundant metallic element? / fuEufyf[kr esa ls dkSu lk lcls çpqj /kkfRod rRo gS\

(a) Aluminium / ,Y;qfefu;e

(b) Iron /yksgk

(c) Gold /lksuk

(d) Silver / pkanh

64. Chemical equation is balanced according to the law of / jklk;fud lehdj.k fdlds fu;e ds vuqlkj larqfyr gksrk gS

(a) Multiple proportions /,dkf/kd vuqikr

(b) Reciprocal proportion / ikjLifjd vuqikr

(c) Conservation of mass / æO;eku dk laj{k.k

(d) Definite proportion / fuf'pr vuqikr

65. 1u is equal to /1u cjkj gS

(a)  $\frac{1}{12}$  of  $c^{12}$

(b)  $\frac{1}{14}$  of  $O^{16}$

(c) 1g of  $H_2$

(d)  $1.66 \times 10^{-23}$  kg

66. The penetrating power of X-rays can be increased by / X-rays dh Hksnu 'kfä dks c<+k;k tk ldrk gS

(a) Increasing the current in the filament /fQykesaV esa djaV c<+kuk

(b) Decreasing the potential difference between the cathode and the anode /dSFkksM vksj ,uksM ds chp laHkkfor varj dks de djuk

(c) Decreasing the current in the filament /fQykesaV esa djaV de djuk

(d) Increasing the potential difference between the cathode and the anode / dSFkksM vksj ,uksM ds chp laHkkfor varj c<+kuk

67. Group number and valency has no relation in/  
lewg la[;k vkSj la;kstdrk dk vkil esa  
dksbZ laca/k ugha gS
- (a) Zero group/ 'kwU; lewg  
(b) First group / igyk lewg  
(c) IIIrd group / rhijk lewg  
(d) VII group / lkroka lewg
68. Outermost shells of two elements  $X$  and  $Y$  have two and six electrons respectively. If they combine the expected formula of the compound will be/ nks rRoksa  $X$  vkSj  $Y$  ds lcls ckgjh dks'k esa Øe'k% nks vkSj Ng bysDV<sup>a</sup>,u gSaA ;fn bUgSa la;ksfr fd;k tk, rks ;kSfxd dk visf{kr lw= gksxk
- (a)  $XY$  (b)  $X_2Y$   
(c)  $X_2Y_3$  (d)  $XY_3$
69. Aqueous solution of acetic acid contains / ,flfVd vEy dk tyh; ?kksy gksrk gS
- (a)  $CH_3COOH, CH_3COO^-$   
(b)  $CH_3COO^-, H^+$   
(c)  $CH_3COOH, CH_3COO^-, H_3O^+$   
(d)  $CH_3COOH, H^+$
70. The strongest reducing agent is / lcls çcy vipk;d gS
- (a)  $HNO_3$  (b)  $H_2S$   
(c)  $H_2SO_3$  (d)  $SnCl_2$
71. Deionised water is produced by / fovk;uh—r ty dk mRiknu gksrk gS
- (a) Calgon's process / dSyx,u dh çfØ;k  
(b) Ion-exchange resin process / vk;u&fofue; jky çfØ;k  
(c) Clark's process / DykdZ dh çfØ;k  
(d) Permutit process / ijE;wfVV çfØ;k
72. To which class of organic compounds soap belongs? / lkcqu dkcZfud ;kSfxdksa ds fdl oxZ ls lacaf/kr gS\
- (a) Aldehydes / ,fYMgkbM  
(b) Salts of organic acid / dkcZfud vEy ds yo.k  
(c) Esters/ ,LVj  
(d) Amines / ,ekbu
73. Toilet soap is a mixture of / V,;ysV lkcqu fdldk feJ.k gS\
- (a) Calcium salt of fatty acids / QSVh ,fIM dk dSfY'k;e ued  
(b) Potassium salt of fatty acids / QSVh ,fIM dk iksVsf'k;e ued  
(c) Fatty acids and alcohol / QSVh ,fIM vkSj vYdksgy  
(d) Phenol and olive oil / fQuksy vkSj tSrwu dk rsy
74. Washing soap can be prepared by saponification with alkali of which of the following oil?/ fuEufyf{kr esa ls fdl rsy ds {kkj ds lKfK lkcquhdj.k }kjk diM+s /kksus dk lkcqu rS;kj fd;k tk ldrk gS\
- (a) Olive oil / tSrwu dk rsy  
(b) Paraffin oil / iSjfkQu rsy  
(c) Groundnut oil / ewaxQyh dk rsy  
(d) Kerosene oil / feêh dk rsy
75. The most important raw materials used in the manufacture of cement are / lhesaV ds fuekZ.k esa ç;qä gksus okyk lcls egRoiw.kZ dPpk eky gS
- (a) Potassium nitrate, charcoal and sulphur/ iksVsf'k;e ukbV<sup>a</sup>sV] pkjdksy vkSj IYQj  
(b) Limestone, clay and gypsum / pwuk iRFkj] feêh vkSj ftlle  
(c) Transition metal oxides, sodium hydroxide or potassium hydroxide / laØe.k /kkrq v,DikbM]

lksfM;e gkbM<sup>a</sup>,DlkbM ;k iksVsf'k;e  
gkbM<sup>a</sup>,DlkbM

(d) Limestone, sodium carbonate and silica/  
pwuk iRFkj] lksfM;e dkcksZusV vkSj  
flfydk

76. The dimension of impulse is equal to that of  
vkosx dk vk;ke ds cjkcj gksrk gS

(a) Force / cy

(b) Linear momentum/ jSf[kd xfr

(c) Pressure / ncko

(d) Angular momentum/ dks.kh; xfr

77. Dimension of impulse is/ vkosx dk vk;ke gS

(a)  $[ML^{-2}T^{-3}]$

(b)  $[ML^{-2}]$

(c)  $[MLT^{-1}]$

(d)  $[MLT^{-2}]$

78. When work is done on the body/ tc 'kjhj ij dke  
fd;k tkrk gS

(a) It gains energy/ ;g ÅtkZ çklr djrk gS

(b) It loses energy/ ;g ÅtkZ [kks nsrk gS

(c) Its energy remains constant/ bldh ÅtkZ  
fLFkj jgrh gS

(d) None of the above/ mijksä esa ls dksbZ  
ugha

79. Choose the wrong statement/ xyr dFku pqusa

(a) Work done is a scalar quantity/ fd;k x;k  
dk;Z ,d vfn'k jkf'k gS

(b) Work done by a body does not depend on the  
time taken to complete the work/ fdlh fudk;  
}kjk fd;k x;k dk;Z dk;Z dks iwjk djus esa  
yxus okys le; ij fuHkZj ugha djrk gS

(c) Work done can never be zero/ fd;k x;k dk;Z  
dHkh Hkh 'kwU; ugha gks ldrk

(d) SI unit of work is joule/ dk;Z dh ,lvkbZ  
bdkbZ twy gS

80. Angular momentum is/ dks.kh; laosx  
gS

(a) Moment of momentum/ xfr dk {k.k

(b) Product of mass and angular velocity/  
æO;eku vkSj dks.kh; osx dk mRikn

(c) Product of moment of inertia and velocity/  
tM+rk vkSj osx ds {k.k dk mRikn

(d) Moment in angular motion/ dks.kh; xfr  
esa {k.k

81. A sphere of mass  $10\text{ kg}$  and radius  $0.5\text{ m}$  rotates  
about a tangent. The moment of inertia of the  
solid sphere is/  $10\text{ fdyks } \text{æO;eku vkSj } 0.5$   
 $\text{ehVj } f=T;k\text{ dk ,d xksyk Li'kZjs[kk ds}$   
 $\text{pkjksa vksj ?kwerk gSA Bksl xksys dk}$   
 $\text{tM+Ro vk?kw.kZ gS}$

(a)  $5\text{ kg} - \text{m}^2$

(b)  $2.7\text{ kg} - \text{m}^2$

(c)  $3.5\text{ kg} - \text{m}^2$

(d)  $4.5\text{ kg} - \text{m}^2$

82. All objects experience the same acceleration due  
to gravity on the earth. This is because the  
gravitational force which is proportional to/  
i'Foh ij xq#Rokd"KZ.k ds dkj.k IHkh  
oLrq; leku Roj.k dk vuqHko djrh gSaA  
bldk dkj.k ;g gS fd xq#Rokd"KZ.k cy tks  
vkuqikfrd gS

(a) Volume / vk;ru

(b) Mass/ æO;eku

(c) Density/ ?kuRo

(d) Weight/ otu

83. Gravitational force shares a common feature  
with electromagnetic force. In both cases, the  
force is / xq#Rokd"KZ.k cy fo|qr pqEcdh;  
cy ds lkFk ,d lkeU; fo'ks"krk lk>k djrk  
gSA nksuksa gh ekeyksa esa] cy gS

(a) Between massive and neutral objects/ fo'kky  
vkSj rVLFk oLrqvksa ds chp

(b) Between charged objects/ vkosf'kr  
oLrqvksa ds chp

(c) A short range / ,d NksVh lhek

(d) A long range/ ,d yach J'a[kyk

84. Out of solid, liquid and gas which has maximum  
elasticity?/ Bksl] æo vkSj xSI esa ls fldlh  
yfsp lcls vf/kd gksrh gS\

(a) Solid/ Bksl

- (b) Gas/ xSI
- (c) Liquid/ rjy
- (d) Cannot be compared/ rgyuk ugha dh tk ldrh
85. The equivalence of two systems in thermal equilibrium is represented by the property/ rkih; larqyu esa nks ç.kkfy;ksa dh rqY;rk dks xq.k }kjk n'kkZ;k tkrk gS
- (a) Heat /xehZ
- (b) Temperature/ rkieku
- (c) Energy / ÅtkZ
- (d) Specific heat/ fof'k"V xehZ
86. Specific heat of a substance depends upon/ fdlh inkFkZ dh fof'k"V Å"ek fuHkZj djrh gS
- (a) Mass of the substance/ inkFkZ dk æO;eku
- (b) Volume of the substance/ inkFkZ dk vk;ru
- (c) Shape of the body/ 'kjhj dk vkdkj
- (d) Nature of the substance/ inkFkZ dh ç—fr
87. The blackboard seems black because it/ CySdckSMZ blfy, dkyk fn[kkbZ nsrk gS
- (a) Reflects every colour/ gj jax dks çfrfcafr djrk gS
- (b) Does not reflect any colour/ fdlh Hkh jax dks çfrfcafr ugha djrk gS
- (c) Absorbs black colour/ dkys jax dks vo'kksf"kr djrk gS
- (d) Reflects black colour/ dkys jax dks n'kkZrk gS
88. If  $g$  denotes the ratio of the two specific heat of a gas, then the ratio of the slopes of adiabatic and isothermal  $p - V$  curves at their point of intersection is / ;fn  $g$  xSI dh nks fof'k"V Å"ekvksa ds vuqikr dks n'kkZrk gS] rks muds çfrPNsnu fcanq ij #)ks"e vkSj btkVseZy  $p - V$  oØksa ds <yukuksa dk vuqikr gS
- (a)  $\frac{1}{\gamma+1}$
- (b)  $\frac{1}{\gamma}$
- (c)  $\gamma - 1$
- (d)  $\gamma$
89. The sun is visible to us a little before the actual sunrise and a little after the actual sunset. This is because of / lw;Z gesa okLrfod lw;ksZn; Is FkksM+k igys rFkk okLrfod lw;kZLr ds dqN nsj ckn fn[kkbZ nsrk gSA bldk dkj.k ;g gS
- (a) Refraction / viorZu
- (b) Scattering / fc[kjko
- (c) Reflection / ijkorZu
- (d) Diffraction/ foorZu
90. The total energy of a particle executing simple harmonic motion is proportional to the / ljj vkorZ xfr djrs gq, ,d d.k dh dqy ÅtkZ lekuqikrh gksrh gS
- (a) Amplitude of the motion / xfr dk vk;ke
- (b) Square of the amplitude of the motion/ xfr ds vk;ke dk oxZ
- (c) Cube of the amplitude of the motion / xfr ds vk;ke dk ?ku
- (d) Square of the acceleration of the body / 'kjhj ds Roj.k dk oxZ
91. Consider a static point charge. If this charge is negative, then the electric lines of forces are/ ,d fLFkj fcanq vkos'k ij fopkj djsaA ;fn ;g vkos'k \_kkRed gS] rks cyksa dh fo|qr js[kk,i gksrh gSa
- (a) Straight lines converging towards the charge/ vkos'k dh vksj vfHklj.k djus okyh lh/kh js[kk,i
- (b) Concentric circle with charge at the centre/ dsaaæ esa vkos'k okyk ladsafær o`Ùk
- (c) Straight lines radiating away from the charge/ vkos'k Is nwj fudyus okyh lh/kh js[kk,i
- (d) Parallel straight lines/ lekukarj lh/kh js[kk,a
92. Three different capacitors are connected in series. On them there will be / rhu vvx&vyx dSisfIVj J`a[kyk esa tqM+s gq, gSaA mu ij gksxk



(a) Equal charges / leku 'kqYd

(b) Equal potential / leku {kerk

(c) Equal charge and equal potential / leku pktZ vkSj leku {kerk

(d) Equal charge and unequal potential/ leku pktZ vkSj vleku {kerk

93. When a particular current flows through a resistance wire, / tc ,d fo'ks" k fo|qr /kkjk fdlh çfrjks/k rkj ls çokfgr gksrh gS]

(a) The heat produced will be more, if the current is drawn from an AC source / ;fn ,lh lzksr ls djaV [khapk tkrk gS] rks mRiUu xehZ vf/kd gksxh

(b) The heat produced will be more, if the current is drawn from DC source / ;fn DC lzksr ls djaV [khapk tkrk gS] rks mRiUu xehZ vf/kd gksxh

(c) No heat will be produced / dksbZ xehZ mRiUu ugha gksxh

(d) Heat will be independent of source and current / Å"ek lzksr vkSj /kkjk ls Lora= gksxh

94. An artificial satellite with metal surface is moving around the earth in a circular orbit. An induced current flows in the satellite. / /kkrq dh lrg okyk ,d —f=e ISV ,y ykbV i`Foh ds pkjksa vkSj xksykdj d{kk esa ?kwe jgk gSA ISV ,y ykbV esa ,d çsfjr /kkjk çokfgr gksrh gSA

Which of the following statements is correct? / fuEufyf[kr dFkuksa esa ls dkSu lgh gS\

(a) The plane of the orbit is inclined to the equatorial plane / d{kk dk ry Hkwe;/js[kh; ry dh vksj >qdk gqvk gS

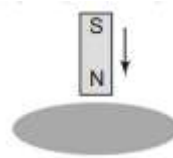
(b) The plane of the orbit is equatorial plane / d{kk dk ry Hkwe;/js[kh; ry gS

(c) Irrespective of the plane of the orbit the satellite speed must be more than 8km/s / d{kk ds lery ds cktwn mixzg dh xfr 8 fdeh/IsdaM ls vf/kd gksuh pkfg,

(d) The plane of the orbit coincides with the equatorial plane and the speed of the satellite is more than 6 km/s/ d{kk dk ry Hkwe;/js[kh;

ry ds lkFk esy [kkrk gS vkSj mixzg dh xfr 6 fdeh/IsdaM ls vf/kd gS

95. The North pole of a magnet is brought near a metallic ring as shown in the figure. The direction of induced current in the ring will be/ tSlk fd fp= esa fn[kk;k x;k gS] eSxusV ds mÙkj /kqzo dks ,d /kkrq dh vaxwBh ds ikl yk;k tkrk gSA oy; esa çsfjr /kkjk dh fn'kk gksxh



(a) Clockwise / nf{k.kkorZ

(b) Anti-clockwise / okekorZ

(c) First clockwise and then anti-clockwise / igys nf{k.kkorZ vkSj fQj foijhr fn'kk esa

(d) First anti-clockwise and then clockwise/ igys ?kM+h dh foijhr fn'kk esa vkSj fQj nf{k.kkorZ fn'kk esa

96. The Indus Valley people knew the use of/ fla/kq ?kkVh ds yksx bldk mi;ksx tkurs Fks

(a) Gold, silver, copper, bronze but not iron/ lksuk] pkanh] rkack] dkaL; ysfdu yksgk ugha

(b) Copper, iron, gold but not bronze/ rkack] yksgk] lksuk ysfdu dkaL; ugha

(c) Silver, lead, iron but not gold/ pkanh] lhk] yksgk ysfdu lksuk ugha

(d) Gold, tin, bronze but not copper/ lksuk] fVu] dkaL; ysfdu rkack ugha

97. Which is the most important divinity of Rigveda?/ \_Xosn dh lcls egRoiw.kZ fnO;rk dkSu lh gS\

(a) Marut / ek#r

(b) Agni/ vfXu

(c) Shakti / 'kfä

(d) Indra/ baæ

98. Megasthenes was the ambassador of/  
esxLFkuht dgk; dk jktnwr Fkk
- (a) Alexander / vvsDtsaMj  
(b) Seleucus Nikator/ lsY;wdl fudsVj  
(c) Darius / Msfj;l  
(d) The Persians/ Qkjfl;ksa
99. The name by which Ashoka is generally referred to in his inscriptions is/ v'kksd dks mlds f'kykys[kksa esa lkeKU;r% fdl uke ls tkuk tkrk gS\
- (a) Priyadarshi / fç;n'khZ  
(b) Dharmadeva/ /keZnso  
(c) Chakravarti / pØorhZ  
(d) Dharmakirti/ /keZdhfrZ
100. Who was the founder of Shunga dynasty?/ 'kqax oa'k dk laLFkkid dkSu Fkk\
- (a) Ajatashatru / vtr'k=q  
(b) Bimbisara/ fcfEckj  
(c) Agnimitra / vfXufe=  
(d) Pushyamitra/ iq";fe=
101. Zero was invented by/ 'kwU; dk vkfo"dkj fdlus fd;k Fkk\
- (a) Aryabhatta/ vk;ZHkê  
(b) Varahmihira/ ojkgfefgj  
(c) Bhaskar / HkkLdj  
(d) Brahmagupta/ czāxqlr
102. Nalanda University flourished during the reign of which of the following rulers?/ fuEufyf[kr esa ls fdl 'kkld ds 'kkludky esa ukyank fo'ofok; dk fodkl gqvk\
- (a) Chandragupta Maurya/ paæxqlr eks;Z  
(b) Ashoka/ v'kksd  
(c) Kanishka/ dfu"d  
(d) Harsha/ g"kZ
103. The terracotta plough of the Harappan Civilisation was found at/ gM+lik lH;rk dk VsjskdkSVk gy dgk; ik;k x;k Fkk
- (a) Mohenjodaro/ eksgutksnM+ks  
(b) Banawali/ cukoyh  
(c) Kalibangan/ dkyhcaxu  
(d) Lothal/ yksFky
104. In whose rule was Islam as the state religion, abolished?/ fdlus 'kkludky esa jkt/keZ ds :i esa bLyke dks leklr dj fn;k x;k\
- (a) Akbar/ vdcj  
(b) Balban/ cycu  
(c) Ibrahim Lodi/ bczkfge yksnh  
(d) Ghiyas-ud-din Tughlaq/ fx;kl&mn&nhu rqxyd
105. Who among the following introduced the famous Persian festival of Nauroz in India?/ fuEufyf[kr esa ls fdlus Hkkjr esa çfl) Qkjlh R;ksgkj ukSjst dh 'kq#vkr dh\
- (a) Balban / cycu  
(b) Firoz Tughlaq/ fQjst rqxyd  
(c) Iltutmish / bYrqfe'k  
(d) Ala-ud-din Khilji/ vykmíhu f[kyth
106. Who among the following was not an exponent of Bhakti Movement?/ fuEufyf[kr esa ls dkSu Hkfä vkanksyu dk çfriknd ugha Fkk\
- (a) Ramananda/ jkekuan  
(b) Kabir/ dchj  
(c) Shankaracharya / 'kadjkpk;Z  
(d) Nanak/ ukud
107. Whose philosophy is called the Advaitvad?/ v}Srokn fdlus n'kZu dks dgk tkrk gS\
- (a) Ramanujacharya/ jkekuqtqpk;Z  
(b) Shankaracharya/ 'kadjkpk;Z  
(c) Nagarjuna/ ukxktqZu

- (d) Vasumitra/ olqfe=
108. Which of the following were the first Europeans to set-up trading settlements in India?/  
fuEufyf[kr esa ls dkSu Hkkjr esa  
O;kikfjd cflr;kj LFkkfir djus okys igys  
;wjksih; Fks\
- (a) French/ Ýsap
- (b) Spanish/ Lisfu'k
- (c) Portuguese/ iqRZxkyh
- (d) Dutch/ Mp
109. Who was the Governor-General when the 1857 Revolt broke out?/ 1857 dk foæksG gksus ij xouZj&tuju dkSu Fkk\
- (a) Canning / dSfuax
- (b) Hastings/ gsflVaXI
- (c) Dalhousie / MygkSth
- (d) Curzon/ dtZu
110. Who among the following was the first woman President of Indian National Congress?/  
fuEufyf[kr esa ls dkSu Hkkjr; jk"Vªh;  
dkaxzsl dh igyh efgyk v/;{k Fkh\
- (a) Sarojini Naidu/ ljksftuh uk;Mw
- (b) Annie Beasant/ ,uh chlsaV
- (c) Sucheta Kriplani/ lqpsrk —iykuh
- (d) Raj Kumari Amrit Kaur/ jkt dqekjh ve`r dkSj
111. The High Court at Bombay, Calcutta and Madras were established under the/ cEcbZ]  
dydÜkk vkSj eækl esa mPp U;k;ky; dh  
LFkkiuk fdlds v/khu dh xbZ Fkh\
- (a) Indian High Court Act, 1861/ Hkkjr; mPp U;k;ky; vf/kfu;e] 1861
- (b) Indian High Court Act, 1865/ Hkkjr; mPp U;k;ky; vf/kfu;e] 1865
- (c) Indian High Court Act, 1911/ Hkkjr; mPp U;k;ky; vf/kfu;e] 1911
- (d) None of the above/ mijksä esa ls dksbZ ugha
112. Who is called the father of Indian Constitution?/  
Hkkjr; lafo/kku dk tud fdls dgk tkrk gS\
- (a) Dr BR Ambedkar/ M, chvkj vacsMdj
- (b) Dr Rajendra Prasad/ M,- jktsaæ çlkn
- (c) Pt Jawahar Lal Nehru/ ia- tokgj yky usg:
- (d) None of the above/ mijksä esa ls dksbZ ugha
113. Which one of the following offices is held during the pleasure of the President of India?/  
fuEufyf[kr esa ls dkSu lk dk;kZy; Hkkjr ds jk"Vªifr ds çlkn; aZr /kkj.k fd;k tkrk gS\
- (a) Vice-President/ mijk"Vªifr
- (b) Chief Justice of India/ Hkkjr ds eq[; U;k;k/kh'k
- (c) Governor of a State/ fdlh jkT; dk jkT;iky
- (d) Chairman of UPSC/ UPSC ds v/;{k
114. Which of the following states became 28th State of India?/  
fuEufyf[kr esa ls dkSu lk jkT; Hkkjr dk 28okj jkT; cuk\
- (a) Uttarakhand / mÜkj[kaM
- (b) Chhattisgarh/ NÜkhlx<+
- (c) Jharkhand / >kj[kaM
- (d) Delhi/ fnYyh
115. The maximum strength of Lok Sabha envisaged by the Constitution is now/ lafo/kku }kjk ifjdfYir yksdlHkk dh vf/kdre 'kfä vc gS
- (a) 552 (b) 548
- (c) 545 (d) 542
116. Who was the first Chief Election Commissioner (CEC) of India?/  
Hkkjr ds igys eq[; pquko vk;qä (CEC) dkSu Fks\
- (a) Sukumar Sen/lqdqekj lsu
- (b) BO Jatti/ BO tÜkh
- (c) KVK Sundaram/ KVK lqanje
- (d) T Swaminathan/ T LokehukFku

117. In which of the following points is the Indian Constitution similar to that of USA?  
fuEufyf[kr esa ls fdl fcanq ij Hkkjrh;  
lafo/kku la;qä jkT; vesfjdk ds lafo/kku ds  
leku gS\

- (a) Rule of law/ dkuwu dk 'kklu
- (b) Fundamental Rights/ ekSfyd vf/kdkj
- (c) DPSP
- (d) Rigid Constitution/ dBksj lafo/kku

118. Indian citizenship is lost when/ Hkkjrh;  
ukxfjdrk dc [kks tkrh gS

- (a) A person acquires a foreign citizenship/ ,d  
O;fä fons'kh ukxfjdrk çklr djrk gS
- (b) The person renounces the citizenship/ O;fä  
ukxfjdrk R;kx nsrk gS

(c) The government deprives a person of  
citizenship for some cause/ ljdkj fdlh dkj.k ls  
fdlh O;fä dks ukxfjdrk ls oafpr dj nsrh  
gS

(d) In all the above cases/ mijksä lHkh  
ekeyksa esa

119. Freedom of the press in India is/ Hkkjr esa çsl  
dh Lora=rk gS

(a) Available to the people under the law of the  
Parliament/ laln ds dkuwu ds rgr yksxksa  
ds fy, miyC/k gS

(b) Specifically provided in the Constitution/  
lafo/kku esa fo'ks"k :i ls çnku fd;k x;k  
gS

(c) Implied in the Right of Freedom of  
Expression/ vfHkO;fä dh Lora=rk ds  
vf/kdkj esa fufgr

(d) Available to the people of India under  
executive order/ dk;Zdkjh vkns'k ds rgr  
Hkkjr ds yksxksa ds fy, miyC/k gS

120. Which one of the following is not a type of  
relationship specified by the Indian Constitution  
between the Centre and the States?/ fuEufyf[kr  
esa ls dkSu lk dsæ vkSj jkT;ksa ds chp  
Hkkjrh; lafo/kku }kjk fufnZ"V çdkj dk  
laca/k ugha gS\

(a) Legislative/ fo/kk;h

(b) Financial/ foÙkh;

(c) Judicial/ U;kf;d

(d) Administrative/ ç'kklfud

121. Himalaya is a / fgeky; gS

(a) Fold mountain / ofyr ioZr

(b) Block mountain / Cy,d ioZr

(c) Volcanic mountain / Tokykeq[kh ioZr

(d) None of the above / mijksä esa ls dksbZ  
ugha

122. The latitudes that pass through Kutch also pass  
through / dPN ls xqtjus okys v{kka'k Hkh  
xqtjrs gSa

(a) Odisha/ vksfM'kk

(b) Arunachal Pradesh/ v#.kkpy çns'k

(c) Mizoram / fetksje

(d) Haryana/ gfj;k.kk

123. According to Census 2011, which one of the  
following Indian states has the maximum  
population in India after Uttar Pradesh?/  
tux.kuk 2011 ds vuqlkj] mÙkj çns'k ds  
ckn Hkkjr ds fuEufyf[kr esa ls fdl jkT; dh  
tula;k lcls vf/kd gS\

(a) West Bengal / if'pe caxky

(b) Maharashtra/ egkjk"Va

(c) Bihar / fcgkj

(d) Tamil Nadu/ rfeyukMq

124. Which one of the following rivers does not  
originate in India? / fuEufyf[kr esa ls dkSu  
lh unh Hkkjr esa ugha fudyrh gS\

(a) Beas / C;kl

(b) Chenab / fpukc

(c) Ravi / jkoh

(d) Sutlej/ lryqt

125. The Tropic of Cancer does not pass through /  
ddZ js[kk ugha xqtjrh gS

(a) Odisha / vksfM'kk

- (b) Tripura / f=iqjk
- (c) Chhattisgarh / NÙkhlx<+
- (d) Rajasthan/ jktLFkku
126. Chambal river is a part of / pEcy unh dk ,d Hkkx gS
- (a) Sabarmati basin / lkcyjrh csflu
- (b) Ganga basin / xaxk csflu
- (c) Narmada basin / ueZnk csflu
- (d) Godavari basin / xksnkojh csflu
127. Which constellation looks like a cluster of twinkling gems in night sky? / dkSu lk u{k= jkf= ds vkdk'k esa fVefVekrs jRuksa ds lewg tSlk fn[krk gS\
- (a) Kruttika (Pleides) / —fÜkdk ¼<sub>4</sub>lysbM~l½
- (b) Scorpio (Vrishchika) / o`f`pd ¼<sub>4</sub>o`f`pdk½
- (c) Orion (Mirga) / vksfj;u ¼<sub>4</sub>fexkZ½
- (d) Ursa Minor (Dhurva Matsaya)/ mlkZ ekbuj ¼<sub>4</sub>/kqjok eRI;k½
128. The closest star of our Solar system is / gekjs lkSjeaMy dk lcls fudVre rkjk gS
- (a) Proxima Centuri / ç,fDlek lsaVqjh
- (b) Sirius / lhfj;l
- (c) Ludo / ywMks
- (d) None of these/ buesa ls dksbZ ugha
129. Asteroids circle between / {kqæxzg fdl ds chp pDdj yxkrs gSa\
- (a) Mars and Jupiter / eaxy vkSj c`gLifr
- (b) Earth and Venus / i`Foh vkSj 'kqØ
- (c) Jupiter and Saturn / c`gLifr vkSj 'kfu
- (d) None of the above/ mijksä esa ls dksbZ ugha
130. Which of the climatic regions is similar to the Mediterranean type? / dkSu lk tyok;q {ks= Hkwe;/lkxjh; çdkj ds leku gS\
- (a) The Taiga type / VSxk çdkj
- (b) The China type / phu çdkj
- (c) The Tropical Savanna / m".kdfVca/kh; lokuk
- (d) The Subtropical Steppe / miks".kdfVca/kh; eSnku
131. The tropical rain forests are dense and varied because of / m".kdfVca/kh; o"kkZ ou ?kus vkSj fofo/k gksus ds dkj.k gSa
- (a) Very little interference from man / euq"; dk cgqr de gLr{kSi
- (b) Their remote and inaccessible locations / muds nwjLFk vkSj nqxZe LFkku
- (c) Poor economic development / [k]kc vkfFkZd fodkl
- (d) An abundance of moisture and warm temperature throughout the year/ iwjs o"kZ ueh dh çpqjrk vkSj xeZ rkieku
132. The average surface temperature of the Earth's surface is / i`Foh dh lrg dk vkSlr rkieku gS
- (a) 10° C (b) 15° C
- (c) 8° C (d) 5° C
133. Radioactive decay provides an internal source of heat for the Earth. This helps in the formation of which type of rocks? / jsfM;ks/kehZ {k; i`Foh ds fy, Å"ek dk vkarfjd lzksr çnku djrk gSA ;g fdl çdkj dh pêkuksa ds fuekZ.k esa lgk;rk djrk gS\
- (a) Igneous / vkXus;
- (b) Sedimentary / volknh
- (c) Metamorphic / dk;kiyV
- (d) All of these/ ;s IHkh
134. Which of the following is the main characteristic of Mediterranean climate? / fuEufyf[kr esa ls dkSu lh Hkwe;/lkxjh; tyok;q dh eq[; fo'ks"krk gS\
- (a) High temperature throughout the year/ iwjs o"kZ mPp rkieku

- (b) Rainfall throughout the year / iwjs o"kkZ o"kkZ
- (c) Rain in winter season / InhZ ds ekSle esa ckfj'k
- (d) Convectional rain / laogukRed o"kkZ
135. Consider the following layers of the atmosphere/ ok; qeaMy dh fuEufyf[kr ijrksa ij fopkj djsa
1. Troposphere / {kksHke.My
  2. Stratosphere / lerkieaMy
  3. Mesosphere / eslksLQh;j
  4. Thermosphere / FkeksZLQh;j
- Which one among the following is the correct sequence of the layers with increasing altitude from the Earth's surface? / fuEufyf[kr esa ls dkSu lk i`Foh dh lrg ls c<+rh ApkbZ ds lkFk ijrksa dk lgh Øe gS\
- (a) 1, 2, 3, 4 (b) 2, 1, 3, 4
- (c) 3, 2, 1, 4 (d) 4, 2, 3, 1
136. Movements of tides are mostly determined by /Tokj dh xfr vf/kdka'kr% fu/kkZfjr gksrh gS
- (a) Albedo effect / vYcsMks çHkko
- (b) Wind velocity / gok dk osx
- (c) Rotation of the Earth / i`Foh dk ?kweuk
- (d) Revolution of the Earth / i`Foh dh Økafr
137. The permanent wind that blows from the horse latitude to the equatorial region is known as /v'o v{kka'k ls fo"qqrh; {ks= dh vksj pyus okyh LFkk;h iou dgykrh gS
- (a) Westerly / if'peh
- (b) Trade wind / O;kikfjd gok
- (c) Doldrum / MksyM<sup>a</sup>e
- (d) Easterly / bZLVjyh
138. 'Yakutsk' are the nomadic herders of / ^; kdqRLd^ ds [kkukcnks'k pjokgs gSa
- (a) Gobi / xksch /lgkjk
- (b) Sahara
- (c) Tundra / VqaM<sup>a</sup>k /dkykqkj
- (d) Kalahari
139. Spruce and cedar are tree varieties of /Lçwl vkSj nsonkj fdldh o`{k çtkfr;kj gSa\
- (a) Equatorial forest / Hkwe/;js[kh; ou
- (b) Temperate coniferous forest / 'khrks".k 'kadq/kkj ou
- (c) Monsoon forest / ekulwu ou
- (d) Temperate deciduous forest / 'khrks".k i.kZikrh ou
140. 'Sal' tree is a / ^lky^ o`{k gS
- (a) Tropical evergreen tree / m".kdfVca/kh; lnkcgkj isM+
- (b) Tropical semi-evergreen tree / m".kdfVca/kh; v/kZ&lnkcgkj isM+
- (c) Dry deciduous tree / lw[kk i.kZikrh isM+
- (d) Moist deciduous tree / ue i.kZikrh isM+
141. Justice Rohini commission is related to which of the following? / tflVI jksfg.kh vk;ksx fuEufyf[kr esa ls fdlls lacaf/kr gS\
- (a) International Arbitration / varjkZ"V<sup>ah</sup>; e;/LFkrk
- (b) Cryptocurrency Arbitration / fØIVksD;wjsalh e;/LFkrk
- (c) Prison Reforms / tsy lq/kkj
- (d) Sub-Categorisation of OBC / OBC dk mi&oxhZdj.k
142. Which one of the following is the best description of 'GJ 1002 b and c', that was in the news recently? / fuEufyf[kr esa ls dkSu lk ^ GJ 1002 b vkSj c dk lcls vPNk o.kZu gS] tks gky gh esa [kcjksa esa Fkk\
- (a) Trojan Asteroids / V<sup>a</sup>kstu ,LVsj; ;M
- (b) Exoplanets / ,DikslySusV

(c) Genetically Modified Rice Varieties/  
vkuoaf'kd :i ls la'kksf/kr pkoy dh  
fdLesa

(d) Torpedo Launch and Recovery Vessels /  
V,jihMks y,p vkSj fjdojh osiYI

143. The SATHEE Platform is an initiative of which of the following ministries?/ SATHEE lysVQ,eZ fuEufyf[kr esa ls fdl ea=ky; dh igy gS\

(a) Ministry of Education/ f'k{k ea=ky;

(b) Ministry of Women and Child Development/  
efgyk ,oa cky fodkl ea=ky;

(c) Ministry of Skill Development and Entrepreneurship/  
dkS'ky fodkl vkSj m|ferk ea=ky;

(d) Ministry of Micro, Small and Medium Enterprises/  
lw{e} y?kq vkSj e/e m|e ea=ky;

144. Cabinet has approved LIGO- India, gravitational –wave detector to be built in Maharashtra, the I in LIGO stands for \_\_\_\_./ dSfcusV us LIGO &Hkkjr dks eatwjl ns nh gS] egkj"V<sup>a</sup> esa xq#Rokd"KZ.k&rjax fMVsDVj dk fuekZ.k fd;k tk,xk] LIGO esa I dk vFkZ \_\_\_\_ gSA

(a) Interference/ gLr{kxi

(b) Interferometer/ baVjQsjkseVj

(c) International/ varjkZ"V<sup>a</sup>h;

(d) Institutional/ laLFkkr

145. The sun halo phenomenon, which was recently seen in the news, occurs due to:/ lw;Z çHkkeaMy ?kVuk] tks gky gh esa lekpkjksa esa ns[kh xbZ] fdlds dkj.k ?kfVr gksrh gS%

(a) Total Internal Reflection/ iw.kZ vkarfjd çfrfcac

(b) Refraction of sunlight/ lw;Z ds çdk'k dk viorZu

(c) Solar flares/ lkSj Tokyk,j

(d) None of these/ buesa ls dksbZ ugha

146. Which one of the following is the best description of 'AGNI DAMAN- 23', that was in the news

recently? / fuEufyf[kr esa ls dkSu lk ^vfXu neu& 23^ dk lcls vPNk o.kZu gS] tks gky gh esa [kcjksa esa Fkk\

(a) It is a rescue operation carried out by the Indian Army. / ;g Hkkjrh; lsuk }kjk pyk;k x;k ,d cpko vfHk;ku gSA

(b) It is a firefighting exercise. / ;g ,d vfXu'keu vH;kl gSA

(c) It is a bilateral exercise between the armies of India and the US. / ;g Hkkjr vkSj vesfjdk dh lsukvksa ds chp ,d fji{kx; vH;kl gSA

(d) None of the above./ mijksä esa ls dksbZ ugha

147. The Izu-Ogasawara Trench which was in news recently, is an oceanic trench located in/ btw&vksxklkojk xrZ tks gky gh esa [kcjksa esa Fkk] ,d leqæh xrZ gS tks fLFkr gS

(a) Indian ocean/ fgan egklkxj

(b) Atlantic ocean/ vVykaVd egklkxj

(c) Eastern Pacific Ocean/ iwohZ ç'kkr egklkxj

(d) Western Pacific Ocean/ if'peh ç'kkr egklkxj

148. Match the following Exercises with their respective participating countries/ fuEufyf[kr vH;klksa dk muds lacaf/kr Hkkx ysus okys ns'kksa ds lFk feyku djsa

1. Samudra Shakti Arabia

a. India and Saudi Arabia

leqæ 'kfä IÅnh vjc

Hkkjr vkSj

2. 'AL- MOHED AL- HINDI UK

b.India and the UK

^vy&eksgEen vy&fganh ;wds

Hkkjr vkSj

3. Ajeya Warrior

c. India and Indonesia

vtS; okfj;j baMksusf'k;k

Hkkjr vkSj

4. Ekuverin Maldives

d. India and Maldives

,dqosfju

Hkkjr vkSj ekynho

(a)  $1C - 2A - 3B - 4D$  (b)  
 $1C - 2D - 3A - 4B$

(c)  $1C - 2A - 3D - 4B$  (d)  
 $1C - 2B - 3A - 4D$

149. Siniyah Island, recently in news, is part of-  
ffu;kg }hi] tks gky gh esa [kcjksa esa  
gS] fdldk fgLlk gS&

- (a) Saudi Arabia/ lÅnh vjc
- (b) United Arab Emirates/ la;qä vjc vehjkr
- (c) Turkey/ rqdhZ
- (d) Iran/ bZjku

**NDA MATHEMATICS**

150. In the Union Budget 2023-24, a new MISHTI scheme was announced. The primary objective of the scheme is/ dsaæh; ctV 2023&24 esa ,d ubZ fe"Vh ;kstuk dh ?kks"k.kk dh xbZA ;kstuk dk çkFkfed mís'; gS

- (a) Promote discovery and popularity of Indian sweets for getting GI tag./ GI VSx çklr djus ds fy, Hkkjrh; feBkb;ksa dh [kkst vkSj yksdfç;rk dks c<+kok nsukA
- (b) Management of industries and development of Human Resources in them./ m|ksxksa dk çca/ku vkSj muesa ekuo lalk/kuksa dk fodklA
- (c) Conservation of tigers through increased afforestation./ c<+s gq, ouhdj.k ds ek;/e ls ck?kksa dk laj{k.kA
- (d) Mangrove plantation./ eSaxzkso o`{kkjksi.kA

**NDA Mathematics**

151. If  $\log_{10} 2 = 0.30103$ , Then  $\log_{10} 50$  is equal to/  
;fn  $\log_{10} 2 = 0.30103$ , rks  $\log_{10} 50$  cjkcj  
gS

- (a) 2.30103
- (b) 2.69897
- (c) 1.69897
- (d) 0.69897

152. If  $A = [1\ 2\ 3\ 4]$ ,  $B = [2\ 3\ 4\ 5]$  and  $4A - 3B + C = O$ , then  $C$  is equal to/ ;fn  $A = [1\ 2\ 3\ 4]$ ,  $B = [2\ 3\ 4\ 5]$  vkSj  $4A - 3B + C = O$ , rks  $C$  cjkcj gS

- (a)  $[2\ -1\ 0\ 1]$
- (b)  $[2\ 1\ 0\ -1]$
- (c)  $[-2\ 1\ 0\ -1]$
- (d) None of these/ buesa ls dksbZ ugha

153. If  $A = [1\ 0\ -1\ 7]$  and  $I = [1\ 0\ 0\ 1]$ , then the value of  $k$ , so that  $A^2 = 8A + kI$  is/ ;fn  $A = [1\ 0\ -1\ 7]$  vkSj  $I = [1\ 0\ 0\ 1]$ , fQj  $k$  dk eku] rkfd  $A^2 = 8A + kI$  gks

- (a) 4
- (b) 5
- (c) 6
- (d) -7

154. The value of  $x$  for which  $[1\ 1\ x][1\ 0\ 2\ 0\ 2\ 1\ 2\ 1\ 0][1\ 1\ 1] = 0$  is/ ftlds fy,  $x$  dk eku

- (a) 2
- (b) -2
- (c) 3
- (d) -3

155. Let  $\Delta = |1\ \sin\ \alpha\ 1\ -\ \sin\ \alpha\ 1\ \sin\ \alpha\ -1\ -\ \sin\ \alpha|$  then  $\Delta$  lies in the interval / eku yhf,  $\Delta = |1\ \sin\ \alpha\ 1\ -\ \sin\ \alpha\ 1\ \sin\ \alpha\ -1\ -\ \sin\ \alpha|$  rks  $\Delta$  varjky esa fLFkr gS

- (a)  $[2, 3]$
- (b)  $[3, 4]$
- (c)  $[1, 4]$
- (d)  $[2, 4]$

156. If  $f(x) = x^2 - 4x - 5$ , then  $f(A)$ , Where  $A = |1\ 2\ 2\ 2\ 1\ 2\ 2\ 2\ 1|$ , is equal to/ ;fn  $f(x) = x^2 - 4x - 5$ , rks  $f(A)$ , tggj  $A = |1\ 2\ 2\ 2\ 1\ 2\ 2\ 2\ 1|$ , ds cjkcj gS



(a) 0

(b) I

(c) - I

(d) 2I

157. If

$|x^2 + 2x^2x + 112x + 1x + 21331| = (x - 1)$   
then k equals to / ;fn

$|x^2 + 2x^2x + 112x + 1x + 21331| =$   
rks k ds cjkcg S

(a) 1

(b) 2

(c) 3

(d) 4

158. If

$\Delta = |1 \alpha \alpha^2 \cos \cos (n - 1)x \cos \cos nx \cos \cos ($   
then  $\Delta$  is / ;fn

$\Delta = |1 \alpha \alpha^2 \cos \cos (n - 1)x \cos \cos nx ($   
rks  $\Delta$  gS

(a) Independent of x/ x ls Lora=

(b) Independent of a/ a ls Lora=

(c) Independent of n/ n ls Lora=

(d) None of these/ buesa ls dksbZ ugha

159. What is the measure of the angle  $114^\circ 35' 30''$  in radian?/ dks.k  $114^\circ 35' 30''$  dk eki jsfM;u esa D;k gS\

(a) 1 rad/1 jsM

(b) 2 rad/ 2 jsM

(c) 3 rad/ 3 jsM

(d) 4 rad/ 4 jsM

160. The angle between the minute hand and the hour hand of a clock when the time is 8:25 am is / tc lqcg 8%25 cts dk le; gksrk gS rks ?kM+h dh feuV dh lqbZ vkSj ?kaVs dh lqbZ ds chp dk dks.k gksrk gS

(a)  $92^\circ 45'$

(b)  $102^\circ 30'$

(c)  $105^\circ$

(d)  $107^\circ 15'$

161. What is the value of  $\sin \sin 292 \frac{1}{2}^\circ$  /  $\sin \sin 292 \frac{1}{2}^\circ$  dk eku D;k gS\

(a)  $\frac{1}{3}\sqrt{2 + \sqrt{3}}$

(b)  $-\frac{1}{3}\sqrt{2 - \sqrt{3}}$

(c)  $\frac{1}{2}\sqrt{2 + \sqrt{2}}$

(d)  $-\frac{1}{2}\sqrt{2 + \sqrt{2}}$

162. Which one of the following is correct?

$(1 + \cos 67 \frac{1^\circ}{2})(1 + \cos \cos 112 \frac{1^\circ}{2})$  is / fuEufyf[kr esa ls dkSu lk lgh gS\  $(1 + \cos 67 \frac{1^\circ}{2})(1 + \cos \cos 112 \frac{1^\circ}{2})$  gS

(a) An irrational number and is greater than 1/,d vifjes; la;k vkSj 1 ls cM+h gS

(b) A rational number but not an integer/,d ifjes; la;k ysfdu iw.kkaZd ugha

(c) An integer/ ,d iw.kkaZd

(d) An inrrational number and is less than 1/,d vifjes; la;k vkSj 1 ls de gS

163. What is the value of

$\cos(\frac{\pi}{9}) + \cos(\frac{\pi}{3}) + \cos(\frac{5\pi}{9}) + \cos(\frac{7\pi}{9})$  /  $\cos(\frac{\pi}{9}) + \cos(\frac{\pi}{3}) + \cos(\frac{5\pi}{9}) + \cos(\frac{7\pi}{9})$  dk eku D;k gS\

(a) 1

(b) - 1

(c)  $-\frac{1}{2}$

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

164.  $\tan \tan \frac{7\pi}{6}, \tan \frac{9\pi}{4}, \tan \frac{10\pi}{3}$  are in / esa gSa

(a) AP

(b) GP

(c) HP

(d) None of these/ buesa ls dksbZ ugha

165.  $\frac{\sin \sin x + \sin \sin 3x + \sin \sin 5x + \sin \sin 7x}{\cos \cos x + \cos \cos 3x + \cos \cos 5x + \cos \cos 7x}$  is equal to /  $\frac{\sin \sin x + \sin \sin 3x + \sin \sin 5x + \sin \sin 7x}{\cos \cos x + \cos \cos 3x + \cos \cos 5x + \cos \cos 7x}$  ds cjkcg gS

(a)  $\tan \tan 16x$

(b)  $\tan \tan 8x$

(c)  $\tan \tan 4x$

(d)  $\tan \tan 2x$

166. If  $\tan \tan \theta + \sin \sin \theta = m$  and  $\tan \tan \theta - \sin \sin \theta = n$ , then
- $\tan \tan \theta + \sin \sin \theta = m$
- $\tan \tan \theta - \sin \sin \theta = n$ ,

(a)  $m^2 - n^2 = 4mn$

(b)  $m^2 + n^2 = 4mn$

(c)  $m^2 - n^2 = m^2 + n^2$

(d)  $m^2 - n^2 = 4\sqrt{mn}$

167. If  $\cos \cos \theta = \frac{\alpha \cos \phi + b}{\alpha + b \cos \phi}$ , then  $\tan \frac{\theta}{2}$  is equal to
- $\cos \cos \theta = \frac{\alpha \cos \phi + b}{\alpha + b \cos \phi}$ , rks
- $\tan \frac{\theta}{2}$  cjkj gS

(a)  $\sqrt{\frac{a-b}{a+b}} \tan \frac{\phi}{2}$

(b)  $\sqrt{\frac{a+b}{a-b}} \cos \frac{\phi}{2}$

(c)  $\sqrt{\frac{a-b}{a+b}} \sin \frac{\phi}{2}$

(d) None of these/ buesa ls dksbZ ugha

168. What is the principle value of  $\operatorname{cosec}^{-1}(-\sqrt{2})$ ?
- $\operatorname{cosec}^{-1}(-\sqrt{2})$  dk fl)kar eku D;k gS\

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

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

(c)  $-\frac{\pi}{4}$

(d) 0

169.  $\sin \sin \left[ \frac{\pi}{3} - \sin^{-1} \left( -\frac{1}{2} \right) \right]$  is equal to/ rks
- $\sin \sin \left[ \frac{\pi}{3} - \sin^{-1} \left( -\frac{1}{2} \right) \right]$  cjkj gS

(a)  $\frac{1}{2}$

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

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

(d) 1

170. A 30m Long ladder is placed against a wall 15m high such that it just reaches the top of the wall. The angle made by the ladder with the horizontal is/ ,d 30 ehVj yach lh<+h dks 15 ehVj Åaph nhokj ds lkeus bl çdkj j[kk x;k gS fd og nhokj ds 'kh"KZ rd igqap tk,A lh<+h }kjk {kSfrt ds lkFk cuk;k x;k dks.k gS

(a)  $30^\circ$

(b)  $45^\circ$

(c)  $60^\circ$

(d)  $90^\circ$

171. The coordinates of the middle points of the sides of a triangle are (4, 2), (3, 3) and (2, 2), then find the coordinates of its centroid are/ ,d f=Hkqt dh Hkqtkvksa ds e/; fcanqvksa ds funsZ'kkad  $\frac{1}{4} \cdot 2 \cdot \frac{1}{2} \cdot \frac{1}{4} \cdot 3 \cdot \frac{1}{2}$  vkSj  $\frac{1}{2} \cdot 2 \cdot \frac{1}{2}$  gSa] rks blds dsUæd ds funsZ'kkad Kkr dhft,

(a)  $\left( 3, \frac{7}{3} \right)$

(b) (3, 3)

(c) (4, 3)

(d) None of these/ buesa ls dksbZ ugha

172. The co-ordinates of incentre of  $\Delta ABC$  with vertices  $A(0, 6)$ ,  $B(8, 12)$  and  $C(8, 0)$  is/ 'kh"KZ  $A(0, 6)$ ,  $B(8, 12)$  vkSj  $C(8, 0)$  ds lkFk  $\Delta ABC$  ds var%dsæd ds funsZ'kkad gSa

(a)  $\left( \frac{16}{3}, 0 \right)$

(b) (8, 11)

(c) (-4, 3)

(d) (5, 6)

173. The middle point of the segment of the straight line joining the points  $(p, q)$  and  $(q, -p)$  is  $(r/2, s/2)$ . what is the length of the segment?/ fcanqvksa  $(p, q)$  vkSj  $(q, -p)$  dks tksM+us okyh lh/kh js[kk ds [kaM dk e/; fcanq  $(r/2, s/2)$ . gSA [kaM dh yackbZ D;k gS\

(a)  $\left[ (s^2 + r^2)^{1/2} \right] / 2$

(b)  $\left[ (s^2 + r^2)^{1/2} \right] / 4$

(c)  $(s^2 + r^2)^{1/2}$

(d)  $s + r$

174. If  $t_1 \neq t_2$  and the points  $A(\alpha, 0)$ ,  $B(at_1^2, 2at_1)$  and  $C(at_2^2, 2at_2)$  are collinear, then  $t_1 t_2$  is equal to/ ;fn  $t_1 \neq t_2$  vkSj fcanq  $A(\alpha, 0)$ ,  $B(at_1^2, 2at_1)$  vkSj  $C(at_2^2, 2at_2)$  lajs[k gSa] rks  $t_1 t_2$  ds cjkj gS

(a) 1

(b) 2

(c) - 1

(d) - 2

175. The area of quadrilateral ABCD whose vertices in order are  $A(1, 1)$ ,  $B(7, -3)$ ,  $C(12, 2)$  and  $D(7, 21)$  is/ prqHkqZt ABCD dk {ks=Qy ftlds 'kh"KZ Øe esa  $A(1, 1)$ ,  $B(7, -3)$ ,  $C(12, 2)$  vkSj  $D(7, 21)$  gSa

(a) 66 sq units/ 66 oxZ bdkb;kj

(b) 132 sq units/ 132 oxZ bdkb;kj

(c) 124 sq units/ 124 oxZ bdkb;kj

(d) 86.5 sq units/ 86.5 oxZ bdkb;kj

176. The distance between the lines  $4x + 3y = 11$  and  $8x + 6y = 15$  is/ js[kkvksa  $4x + 3y = 11$  vkSj  $8x + 6y = 15$  ds chp dh nwjh gS

(a) 7/2

(b) 7/3

(c) 7/5

(d) 7/10

177. For the equation

$ax^2 + by^2 + 2hxy + 2gx + 2fy + c = 0$ , where  $a \neq 0$ , to represent a circle, the condition will be/ lehdj.k

$ax^2 + by^2 + 2hxy + 2gx + 2fy + c = 0$

ds fy,] tgka  $a \neq 0$ , ,d o`Ùk dk çfrfuf/kRo djus ds fy,] 'krZ gksxh

(a)  $a = b$  And  $c = 0$  /  $a = b$  vkSj  $c = 0$

(b)  $f = g$  And  $h = 0$  /  $f = g$  vkSj  $h = 0$

(c)  $a = b$  And  $h = 0$  /  $a = b$  vkSj  $h = 0$

(d)  $f = g$  And  $c = 0$  /  $f = g$  vkSj  $c = 0$

178. The equation of the circle passing through (4, 5) having the center at (2, 2) is/ dsaae  $1/42]2^{1/2}$  ij  $1/44]5^{1/2}$  ls xqtjus okys o`Ùk dk lehdj.k gS

(a)  $x^2 + y^2 + 4x + 4y - 5 = 0$

(b)  $x^2 + y^2 - 4x - 4y - 5 = 0$

(c)  $x^2 + y^2 - 4x = 13$

(d)  $x^2 + y^2 - 4x - 4y + 5 = 0$

179. The two ends of latusrectum of a parabola are the points (3, 6) and (-5, 6), then the focus is/ ,d ijoy; ds ySVIjsDVe ds nks fljs fcanq  $1/43]6^{1/2}$  vkSj  $1/4-5]6^{1/2}$  gSa] rks Qksdl gS

(a) (1, 6)

(b) (-1, 6)

(c) (1, -6)

(d) (-1, -6)

180. The parametric representation  $(2 + t^2, 2t + 1)$  represents/ iSjkehfv`d çfrfuf/kRo  $(2 + t^2, 2t + 1)$  n'kkZrk gS

(a) A parabola with focus at (2, 1) /  $1/42]1^{1/2}$  ij Qksdl okyk ,d ijoy;

(b) A parabola with vertex at (2, 1) / 'kh"KZ ij ,d ijoy;  $1/42]1^{1/2}$

(c) An ellipse with center at (2, 1) /  $1/42]1^{1/2}$  ij dsaae okyk ,d nh?kZo`Ùk

(d) None of the above / mijksä esa ls dksbz ugha

181. The ratio in which the line joining (2,4,5), (3, 5, - 4) is divided by the YZ -plane is/ og vuqikr ftlesa  $\frac{1}{4} \cdot 2 \cdot 4 \cdot 5 \cdot \frac{1}{2}$   $\frac{1}{4} \cdot 3 \cdot 5 \cdot 4 \cdot \frac{1}{2}$  dks tksM+us okyh js[kk YZ -ry ls foHkkftr gksrh gS

- (a) 2:3
- (b) 3:2
- (c) - 2: 3
- (d) 4: - 3

182. A straight line which makes an angle of  $60^\circ$  with each of Y and Z -axes, is inclined with X -axis at an angle/ ,d lh/kh js[kk tks Y vkSj Z &v{kksa esa ls çR;sd ds lkFk  $60^\circ$  dk dks.k cukrh gS] X &v{k ds lkFk ,d dks.k ij >qdh gqbZ gS

- (a)  $45^\circ$
- (b)  $30^\circ$
- (c)  $75^\circ$
- (d)  $60^\circ$

183. The foot of the perpendicular from (0, 2, 3) to the line  $\frac{x+3}{5} = \frac{y-1}{2} = \frac{z+4}{3}$  is/  $\frac{1}{4} \cdot 0 \cdot 2 \cdot 3 \cdot \frac{1}{2}$  ls js[kk  $\frac{x+3}{5} = \frac{y-1}{2} = \frac{z+4}{3}$  ij yEc dk ikn gS

- (a) (- 2, 3, 4)
- (b) (2, - 1, 3)
- (c) (2, 3, - 1)
- (d) (3, 2, - 1)

184. The line  $\frac{x-2}{3} = \frac{y-3}{4} = \frac{z-4}{5}$  is parallel to the plane/ js[kk  $\frac{x-2}{3} = \frac{y-3}{4} = \frac{z-4}{5}$  ry ds lekukarj gS

- (a)  $2x + y - 2z = 0$
- (b)  $3x + 4y + 5z = 7$
- (c)  $x + y + z = 2$
- (d)  $2x + 3y + 4z = 0$

185. Area lying in the first quadrant and bounded by the circle  $x^2 + y^2 = 4$  and the line  $x = y\sqrt{3}$  equals to/ {ks=Qy igys prqFkkaZ'k esa

fLFkr gS vkSj  $x^2 + y^2 = 4$  vkSj js[kk  $x = y\sqrt{3}$  ls f?kjk gS

- (a)  $\pi$
- (b)  $\pi/2$
- (c)  $\pi/3$
- (d)  $\pi/4$

186. Area bounded by the curves  $y = x \sin x$  and X -axis between  $x = 0$  and  $x = 2\pi$  is/  $x = 0$  vkSj  $x = 2\pi$  ds chp  $y = x \sin x$  vkSj X &v{k ls f?kjk {ks= gS

- (a)  $2\pi$
- (b)  $3\pi$
- (c)  $4\pi$
- (d)  $6\pi$

187. What is the area of the triangle formed by the lines joining the vertex of the parabola  $x^2 = 12y$  to the latusrectum?/ ijoy;  $x^2 = 12y$  ds 'kh" kZ dks ySVIjsDVe ls feykus okyh js[kk vksa ls cus f=Hkqt dk {ks=Qy D;k gS\

- (a) 9 sq units/ 9 oxZ bdkb;kj
- (b) 12 sq units/ 12 oxZ bdkb;kj
- (c) 14 sq units/14 oxZ bdkb;kj
- (d) 18 sq units/18 oxZ bdkb;kj

188. If position vectors of four points A, B, C and D are  $\hat{i} + \hat{j} + \hat{k}$ ,  $2\hat{i} + 3\hat{j}$ ,  $3\hat{i} + 5\hat{j} - 2\hat{k}$  and  $\hat{k} - \hat{j}$  respectively, then AB and CD are related as/;fn pkj fcanqvksa A, B, C vkSj D ds fLFkr lfn'k  $\hat{i} + \hat{j} + \hat{k}$ ,  $2\hat{i} + 3\hat{j}$ ,  $3\hat{i} + 5\hat{j} - 2\hat{k}$  vkSj  $\hat{k} - \hat{j}$  gSa] rks AB vkSj CD bl çdkj lacaf/kr gSa

- (a) Perpendicular/ yacor
- (b) Parallel/ lekukarj
- (c) Independent/ Lora=
- (d) None of these/ buesa ls dksbZ ugha

189. If  $(3a - b) \times (a + 3b) = ka \times b$ , then what is the value of  $k$ ?

$(3a - b) \times (a + 3b) = ka \times b$ , find  $k$

- (a) 10  
(b) 5  
(c) 8  
(d) - 8

190. Point A is  $a + 2b$ , P is  $a$  and P divides AB in the ratio 2:3. The position vector of B is

$a + 2b$ , find P, AB

- (a)  $2a - b$   
(b)  $b - 2a$   
(c)  $a - 3b$   
(d)  $b$

191. If  $a + b + c = p$ ,  $b + c + d = q$  and  $a, b, c$  are non-coplanar, then  $a + b + c + d$  is equal to

$a + b + c = p$ ,  $b + c + d = q$ , find  $a + b + c + d$

- (a) 0  
(b)  $pa$   
(c)  $qb$   
(d)  $(p + q)c$

192. Given that the vector  $\alpha$  and  $\beta$  are non-collinear. The values of  $x$  and  $y$  for which  $u - v = w$  holds true, if  $u = 2x\alpha + y\beta$ ,  $v = 2y\alpha + 3x\beta$  and  $w = 2\alpha - 5\beta$ , are

- (a)  $x = 2, y = 1$                       (b)  $x = 1, y = 2$   
(c)  $x = -2, y = 1$                       (d)  $x = -2, y = -1$

193. A force  $F$  is applied at the point P, whose position vector is  $r = 2\hat{i} - 2\hat{j} - 3\hat{k}$ . What is the magnitude of the moment of the force about the origin?

वेक्टर  $r = 2\hat{i} - 2\hat{j} - 3\hat{k}$  है। मूल बिन्दु के सापेक्ष बल के आघूर्ण का परिमाण क्या है?

- (a) 23 units                                      (b) 19 units  
(c) 18 units                                      (d) 21 units

194. The geometric mean and harmonic mean of two non-negative observations are 10 and 8, respectively. Then, what is the arithmetic mean of the observations?

- (a) 4    (b) 9  
(c) 12.5    (d) 25

195. What is the arithmetic mean of first 16 natural numbers with weights being the number itself?

- (a)  $17/2$     (b)  $33/2$   
(c) 11    (d)  $187/2$

196. If the values of a set are measured in cm, what will be the unit of variance?

- (a) cm  
(b)  $cm^2$   
(c)  $cm^3$   
(d) No unit

197. Consider the following frequency distribution

Class interval	0-10	10-20	20-30	30-40	40-50
Frequency	14	$f_2$	28	$f_4$	15

If the sum of the frequencies is 100 and median is 25, then  $f_2$  and  $f_4$  will be

- (a) 15 and 28/ 15 and 28  
(b) 20 and 23/ 20 and 23  
(c) 22 and 21/ 22 and 21  
(d) 21 and 22/ 21 and 22

198. If the standard deviation of 15 items is 6 and each item is decreased by 1, then standard deviation will be/ ;fn 15 oLrqvksa dk ekud fopyu 6 gS vkSj çR;sd oLrq esa 1 dh deh dh tkrh gS] rks ekud fopyu gksxk

- (a) 5
- (b) 7
- (c) 9
- (d) 6

199. The standard deviation in a variable  $x$  is  $\sigma$ . The standard deviation of the variable  $\frac{ax+b}{c}$ ; where  $a, b$  and  $c$  are constants, is/ ,d pj  $x$  esa ekud fopyu  $\sigma$  gSA pj dk ekud fopyu  $\frac{ax+b}{c}$ ; tgka  $a, b$  vkSj  $c$  fLFkjkd gSa]

- (a)  $\left(\frac{a}{c}\right)\sigma$
- (b)  $\left|\frac{a}{c}\right|\sigma$
- (c)  $\left(\frac{a^2}{c^2}\right)\sigma$
- (d) None of these/ buesa ls dksbZ ugha

200. If  $\bar{x} = \bar{y} = 0, \sum x_i y_i = 12, \sigma_x = 2, \sigma_y = 3$  and  $n = 10$ , then the coefficient of correlation is/ ;fn  $\bar{x} = \bar{y} = 0, \sum x_i y_i = 12, \sigma_x = 2, \sigma_y = 3$  vkSj  $n = 10$ , rks lglaça/k dk xq.kkad gS

- (a) 0.4
- (b) 0.3
- (c) 0.2
- (d) 0.1

201. If  $b_{yx}$  and  $b_{xy}$  are regression coefficients of  $y$  on  $x$  and  $x$  on  $y$  respectively, then which of the following statements is true?/ ;fn  $b_{yx}$  vkSj  $b_{xy}$  Øe'k%  $y$  ij  $x$  vkSj  $x$  ij  $y$  ds çfrxeu xq.kkad gSa] rks fuEufyf[kr esa ls dkSu lk dFku IR; gS\

- (a)  $b_{yx} = 1.5$  and  $b_{xy} = 1.4$
- (b)  $b_{yx} = 1.5$  and  $b_{xy} = 0.9$
- (c)  $b_{yx} = 1.5$  and  $b_{xy} = 0.8$
- (d)  $b_{yx} = 1.5$  and  $b_{xy} = 0.6$

202. If  $n=10, \sum x = 4, \sum y = 3, \sum x^2 = 8, \sum y^2 = 9$ , and  $\sum xy = 3$ , then coefficient of correlat

ion is / ;fn  $n=10,$

$\sum x = 4, \sum y = 3, \sum x^2 = 8, \sum y^2 = 9, \sum xy = 3,$  fQj lglaça/k dk xq.kkad

$\sum xy = 3,$  fQj lglaça/k dk xq.kkad

vk;u gS

- (a)  $\frac{1}{4}$
- (b)  $\frac{7}{12}$
- (c)  $\frac{15}{4}$
- (d)  $\frac{14}{3}$

203. The standard deviation of some consecutive integers is found to be 2. Which of the following statements best describes the nature of the consecutive integers?/ dqN Øekxr iw.kkaZdksa dk ekud fopyu 2 ik;k tkrk gSA fuEufyf[kr esa ls dkSu lk dFku Øekxr iw.kkaZdksa dh ç—fr dk lcls vPNk o.kZu djrk gS\

- (a) The integers are any set of eight consecutive integers/ iw.kkaZd vkB yxkrkj iw.kkaZdksa dk dksbZ lsV gS
- (b) The integers are any set of eight consecutive positive integers/ iw.kkaZd vkB yxkrkj ldkjRed iw.kkaZdksa dk dksbZ lsV gS
- (c) The integers are any set of seven consecutive integers/ iw.kkaZd lkr yxkrkj iw.kkaZdksa dk dksbZ lewg gS

- (d) None of the above/ mijksä esa ls dksbZ ugha
204. Two cards are drawn at random from a deck of 52 cards. The probability of these two being aces is / 52 iÜkksa dh ,d xih esa ls nks iÜks ;k-fPNd :i ls fudkys tkrs gSaA bu nksuksa ds bDds gksus dh çkf;drk gS
- (a) 1/26  
(b) 1/221  
(c) 1/2  
(d) 1/18
205. A card is drawn from a well-shuffled deck cards. The probability of getting a queen of club or king of heart is/ rk'k ds iÜkksa dh vPNh rjg ls QsaVh xbZ Msd ls ,d iÜkk fudkyk tkrk gSA Dyc dh jkuh ;k fny dh jkuh feyus dh laHkkouk gS
- (a) 1/52  
(b) 1/26  
(c) 1/13  
(d) 1/56
206. In shuffling a pack of cards 3 are accidentally dropped, then the chance that missing card should be of different suits is/ dkMksaZ dh ,d xih dks QsaVrs le; xyrh ls 3 dkMZ fxj tkrs gSa] rks laHkkouk gS fd xk;c dkMZ vyx&vyx lwV ds gksaxs\
- (a) 169/425 (b) 261/425  
(c) 104/425 (d) 425/196
207. If there are 4 addressed envelopes and 4 letters. Then, the chance that all the letters are not mailed through proper envelope is / ;fn 4 irs okys fyQkQs vkSj 4 i= gSaA fQj] laHkkouk ;g gS fd lHkh i= mfpr fyQkQs ds ek/;e ls ugha Hksts tk,axs
- (a) 1/24 (b) 1  
(c) 23/24 (d) 9/2
208. A and B are two events such that  $P(A) = 0.3$  and  $(A \cup B) = 0.8$ . If A and B are independent, then  $P(B)$  is/ A vkSj B nks ?kVuk, j bl çdkj gSa fd  $P(A) = 0.3$  vkSj  $P(A \cup B) = 0.8$  ;fn A vkSj B Lora= gSa] rks  $P(B)$  gS
- (a) 2/3  
(b) 3/8  
(c) 2/7  
(d) 5/7
209. A speaks truth in 60% cases and B speaks truth in 70% cases. The probability that they will say the same thing while describing single event, is/ A 60% ekeyksa esa lp cksyrk gS vkSj B 70% ekeyksa esa lp cksyrk gSA laHkkouk ;g gS fd os ,d gh ?kVuk dk o.kZu djrs le; ,d gh ckr dgsaxs
- (a) 0.56  
(b) 0.54  
(c) 0.38  
(d) 0.94
210. The probability that in the toss of two dice, we obtain an even sum or a sum less than 5 is/ nks ikkksa dks mNkyus ij gesa le ;ksx ;k 5 ls de ;ksx çklr gksus dh çkf;drk gS
- (a) 1/2  
(b) 1/6  
(c) 1/3  
(d) 5/9
211.  $f(x) = \frac{\sin \sin x}{x}$ , where  $x \in R$ , is to be continuous at  $x = 0$ , then the value of function  $x = 0$ ;fn  $f(x) = \frac{\sin \sin x}{x}$ ]tgk]  $x \in R$  dks  $x = 0$  ij larr gksuk gS] rks  $x = 0$  ij Qyu dk eku
- (a) should be 0/ 0 gksuk pkfg,  
(b) should be 1/1 gksuk pkfg,  
(c) should be 2/ 2 gksuk pkfg,  
(d) cannot be determined/fu/kkZfjr ugha fd;k tk ldrk

212. The solution of the differential equation

$$dy = (1 + y^2)dx$$

(a)  $y = \tan \tan x + c$

(b)  $y = \tan \tan (x + c)$

(c)  $\tan^{-1}(y + c) = x$

(d)  $\tan^{-1}(y + c) = 2c$

213. What is  $\int (e^{\log \log x} + \sin \sin x) \cos \cos x dx$

equal to ?/fdlds cjkcj gS\

(a)  $\sin \sin x + x \cos \cos x + \frac{\sin^2 x}{2} + c$

(b)  $\sin \sin x - x \cos \cos x + \frac{\sin^2 x}{2} + c$

(c)  $x \sin \sin x + \cos \cos x + \frac{\sin^2 x}{2} + c$

(d)  $x \sin \sin x - x \cos \cos x + \frac{\sin^2 x}{2} + c$

214. What is the domain of the function

$$f(x) = \cos^{-1}(x - 2)$$

(a)  $[-1, 1]$

(b)  $[1, 3]$

(c)  $[0, 5]$

(d)  $[-2, 1]$

215. What is the area of the region enclosed between the curve  $y^2 = 2x$  and the straight line  $y = x$ ?

$$y^2 = 2x \text{ and } y = x$$

(a)  $\frac{1}{2}$

(b) 1

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

(d) 2

216. If  $f(x) = 2x - x^2$ , then what is the value of  $f(x + 2) + f(x - 2)$  when  $x = 0$ ?

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

$$f(x + 2) + f(x - 2)$$

(a) - 8

(b) - 4

(c) 8

(d) 4

217. If  $x^m y^n = a^{m+n}$ , then what is  $\frac{dy}{dx}$  equal to ?/fn  $x^m y^n = a^{m+n}$  gks] rks  $\frac{dy}{dx}$  fdlds cjkcj gS\

(a)  $\frac{my}{nx}$

(b)  $-\frac{my}{nx}$

(c)  $\frac{mx}{ny}$

(d)  $-\frac{ny}{mx}$

218. What is  $\int \frac{dx}{x(x^2+1)}$  equal to ?/  $\int \frac{dx}{x(x^2+1)}$  fdlds cjkcj gS\

(a)  $\frac{1}{2} \ln \left( \frac{x^2}{x^2+1} \right) + C$

(b)  $\ln \left( \frac{x^2+1}{x^n} \right) + C$

(c)  $\ln \left( \frac{x^n}{x^n+1} \right) + C$

(d)  $\frac{1}{n} \ln \left( \frac{x^n+1}{x^n} \right) + C$

219. What is the minimum value of  $|x - 1|$ , where  $x \in \mathbb{R}$  ?/  $|x - 1|$  dk U;wure eku D;k gS] tgkj  $x \in \mathbb{R}$  gS\

(a) 0

(b) 1

(c) 2

(d) - 1

220. What is the value of  $k$  such that integration of  $\frac{3x^2+8-4k}{x}$  with respect to  $x$ , may be a rational function ?/  $k$  dk og eku D;k gS ftlds fy,  $\frac{3x^2+8-4k}{x} dx$  ds lkis{k lekdyu] ,d ifjes; Qyu gks ldrk gS\

(a) 0

(b) 1

(c) 2

(d) - 2

221. What is the derivative of  $e^x$  with respect to  $x^e$  ?/  $x^e$  ds lkis{k  $e^x$  dk vodyt D;k gS\

(a)  $\frac{xe^x}{e^x}$

(b)  $\frac{e^x}{x^e}$

(c)  $\frac{xe^x}{x^e}$

(d)  $\frac{e^x}{e^x}$

222. If a differentiable function  $f(x)$  satisfies  $\lim_{x \rightarrow -1} \frac{f(x)+1}{x^2-1} = -\frac{3}{2}$  then what is  $\lim_{x \rightarrow -1} f(x)$  equal to ?/fn



dk sbZ vody Qyu  $f(x)$   
 $\lim_{x \rightarrow -1} \frac{f(x)+1}{x^2-1} = -\frac{3}{2}$  dks larq'V djrk  
 gS] rks  $\lim_{x \rightarrow -1} f(x)$  fdl ds cjkj gS\

- (a)  $-\frac{3}{2}$  (b)  $-1$   
 (c)  $0$  (d)  $1$

If the function

$$f(x) = \begin{cases} a + bx, & x < 1 \\ b - ax, & x > 1 \end{cases}$$

223.

is continuous, then what is the value of  $(a + b)$ ?

$f(x) = \begin{cases} a + bx, & x < 1 \\ b - ax, & x > 1 \end{cases}$  larr gS] rks  $(a + b)$  dk eku D;k gS\

- (a)  $5$  (b)  $10$   
 (c)  $15$  (d)  $20$

224. Consider the following statement in respect of the function  $(x) = \sin \sin x$  :  
 lanHkZ esa fuEufyf[kr dFkuksa ij fopkj dhft, %

- $f(x)$  increases in the interval  $(0, \pi)$ . / varjky  $(0, \pi)$ . esa  $f(x)$  o/kZeku gSA
- $f(x)$  decreases in the interval  $(\frac{5\pi}{2}, 3\pi)$ . / varjky  $(\frac{5\pi}{2}, 3\pi)$  esa  $f(x)$  gkleku gSA

Which of the above statements is/are correct? / mi;qZä dFkuksa esa ls dkSu&lk@ls lgh gS@gS\

- (a) 1 only / dsoy 1  
 (b) 2 only / dsoy 2  
 (c) Both 1 and 2 / 1 vkSj 2 nksuksa  
 (d) neither 1 nor 2 / u rks 1 vkSj u gh 2

225. What is the domain of the function

$$f(x) = 3^x \text{ / Qyu } f(x) = 3^x \text{ dk izkar D;k gS\}$$

- (a)  $(-\infty, \infty)$  (b)  $(0, \infty)$   
 (c)  $[0, \infty)$  (d)  $(-\infty, \infty) - \{0\}$

226. If the general solution of a differential equation is  $y^2 + 2cy - cx + c^2 = 0$ , where  $c$  is an arbitrary constant, then what is the order of the differential equation? / fn ,d vody lehdj.k dk O;kid gy gS] tgk; ,d

LosPN vpj gS] rks vody lehdj.k dh dksfv D;k gS\

- (a) 1 (b) 2  
 (c) 3 (d) 4

227. What is the degree of the following

differential equation?  $x = \sqrt{1 + \frac{d^2y}{dx^2}}$  / vody

lehdj.k  $x = \sqrt{1 + \frac{d^2y}{dx^2}}$  dk ?kkr  $\frac{1}{4} \text{ fMxz} \frac{1}{2}$

D;k gS\

- (a) 1  
 (b) 2  
 (c) 3  
 (d) Degree is not defined / ?kkr ifjHkkf'kr ugha gS

228. Which one of the following differential equations has the general solution

$$y = ae^x + be^{-x} \text{ / fuEufyf[kr esa ls fdl}$$

vody lehdj.k dk O;kid gy  $y = ae^x + be^{-x}$  gS\

- (a)  $\frac{d^2y}{dx^2} + y = 0$  (b)  $\frac{d^2y}{dx^2} - y = 0$   
 (c)  $\frac{d^2y}{dx^2} + y = 1$  (d)  $\frac{dy}{dx} - y = 0$

229. What is the solution of the following differential equation?  $\ln\left(\frac{dy}{dx}\right) + y = x$

/vody lehdj.k  $\ln\left(\frac{dy}{dx}\right) + y = x$  dk gy D;k gS\

- (a)  $e^x + e^y = c$  (b)  $e^x + y = c$   
 (c)  $e^x - e^y = c$  (d)  $e^x - y = c$

230. What is  $\int e^{(2 \ln x + \ln x^2)} dx$  equal to? /

$$\int e^{(2 \ln x + \ln x^2)} dx \text{ fdl ds cjkj gS\}$$

- (a)  $\frac{x^4}{4} + c$  (b)  $\frac{x^3}{3} + c$   
 (c)  $\frac{2x^5}{5} + c$  (d)  $\frac{x^5}{5} + c$

231. Consider the following relations for two events E and F: / nks vuqo`Yk ¼bosaV½ vkSj ds fy, fuEufyf[kr O;atdks ij fopkj dhft,%

1.  $P(E \cap F) \geq P(E) + P(F) - 1$
2.  $P(E \cup F) = P(E) + P(E) + P(E \cap F)$
3.  $P(E \cup F) \leq P(E) + P(F)$

Which of the above relations is/are correct?/mi;qZä O;atdksa esa ls dkSu&lk@dkSu&ls lgh gS@gS\

- (a) 1 Only/dsoy 1
- (b) 3 Only/ dsoy 3
- (c) 1 and 3 Only/ dsoy 1 vkSj 3
- (d) 1, 2 and 3/1, 2 vkSj 3

232. If  $P(B) < P(A)$ , then which one of the following is correct?;/fn gS] rks fuEufyf[kr esa ls dkSu&lk lgh gS\

- (a)  $P(A) < P(B)$
- (b)  $P(A) > P(B)$
- (c)  $P(A) = P(B)$
- (d)  $P(A) > P(A)$

233. When the measures of central tendency is available in the form of mean, which one of the following is the most reliable and accurate measure of variability?/tc dsUnzh; izo`fYk dh eki ek/; ds :lk esa miyCk/k gS] rks fuEufyf[kr esa ls dkSu&lh ifjofrZrk dh lcls vf/kd foJluh; vkSj ;FkkFkZ eki gS\

- (a) Range/ ifjlj ¼jtsat½
- (b) Mean deviation/ek/; fopyu
- (c) Standard deviation/ekud fopyu
- (d) Quartile deviation/prqFkZd fopyu

234. A problem is given to three students A,B and C, whose probabilities of solving the problem independently are  $\frac{1}{2}$ ,  $\frac{3}{4}$  and P respectively. If the probability that the problem can be solved is  $\frac{29}{32}$ , then what is the value of P?/ rhu Nk= A,B vkSj C dks ,d iz"u fn;k tkrk gSA iz"u dks Lora= :lk ls gy djus dh izkf;drk, Øe"K%

$\frac{1}{2}$ ,  $\frac{3}{4}$  vkSj P gSa ;fn iz"u gy djus dh izkf;drk  $\frac{29}{32}$  gS] rks P dk eku D;k gS\

- (a)  $\frac{2}{5}$
- (b)  $\frac{2}{3}$
- (c)  $\frac{1}{3}$
- (d)  $\frac{1}{4}$

235. In a cricket match, a batsman hits a six 8 times out of 60 balls he plays. What is the probability that on a ball played he does not hit a six?/,d fØdsV eSp esa] ,d cysckt mlds }kjk [ksyh xbZ 60 xsnkSa esa 8 ckj Ndk ¼N%½ ekjrk gSA bl ckr dh D;k izkf;drk gSA fd mlds }kjk [ksyh xbZ fdlh xasn esa og Ndk ¼N%½ u ekjs\

- (a)  $\frac{2}{3}$
- (b)  $\frac{1}{15}$
- (c)  $\frac{2}{15}$
- (d)  $\frac{13}{15}$

Direction: Consider the following for the next two (02) items that follow./funsz"K% vkxs vkus okys nks ¼02½ iz"uka"Kksa ds fy, fuEufyf[kr ij fopkj dhft,A

Two regression lines are given as  $3x - 4y + 8 = 0$  and  $4x - 3y - 1 = 0$ . / nks lekJ;.k ¼fjxzS"ku½ js[kk,i  $3x - 4y + 8 = 0$  vkSj  $4x - 3y - 1 = 0$  ds :lk esa nh xbZ gSA

236. Consider the following statements:/fuEufyf[kr dFkuksa ij fopkj dhft,%

1. The regression line of y on x is  $y = \frac{3}{4}x + 2$  / x ij y dh lekJ;.k js[kk  $y = \frac{3}{4}x + 2$  gSaA
2. The regression line of x on y is  $x = \frac{3}{4}y + \frac{1}{4}$  / y ij x dh lekJ;.k js[kk  $x = \frac{3}{4}y + \frac{1}{4}$  gSS

Which of the above statements is /are correct?/mi;qZä dFkuksa esa ls dkSu&lk@dkSu&ls lgh gS@gS\

- (a) 1 Only/dsoy 1
- (b) 2 Only/ dsoy 2
- (c) Both 1 and 2/ 1 vkSk 2 nksuksa

(d) Neither 1 nor 2/ u rks 1 vkSj u gh 2

237. Consider the following statements:  
 1. The coefficient of correlations  $r$  is  $\frac{3}{4}$ .  
 2. The means of  $x$  and  $y$  are 3 and 4 respectively.

Which of the above statement is correct?  
 (a) 1 Only  
 (b) 2 Only  
 (c) Both 1 and 2  
 (d) Neither 1 nor 2

238. What is the equation of the ellipse whose vertices are  $(\pm 5, 0)$  and foci are at  $(\pm 4, 0)$ ?

- (a)  $\frac{x^2}{25} + \frac{y^2}{9} = 1$       (b)  $\frac{x^2}{16} + \frac{y^2}{9} = 1$   
 (c)  $\frac{x^2}{25} + \frac{y^2}{16} = 1$       (d)  $\frac{x^2}{y} + \frac{y^2}{25} = 1$

239. What is the equation of the straight line passing through the point  $(2, 3)$  and making an intercept on the positive Y-axis equal to twice its intercept on the positive X-axis?

- (a)  $2x + y = 5$       (b)  $2x + y = 7$   
 (c)  $x + 2y = 7$       (d)  $2x - y = 1$

240. Let the coordinates of the points  $A, B, C$  be  $(1, 8, 4), (0, -11, 4)$  and  $(2, -3, 1)$  respectively. What are the coordinates of the point  $D$  which is the foot of the perpendicular from  $A$  on  $BC$ ?

(a)  $(1, 8, 4)$       (b)  $(0, -11, 4)$   
 (c)  $(2, -3, 1)$       (d)  $(2, -3, 1)$

241. Suppose  $\omega$  is a cube root of unity with  $\omega \neq 1$ . Suppose  $P$  and  $Q$  are the points on the complex plane defined by  $\omega$  and  $\omega^2$ . If  $O$  is the origin, then what is the angle between  $OP$  and  $OQ$ ?

- (a)  $60^\circ$       (b)  $90^\circ$   
 (c)  $120^\circ$       (d)  $150^\circ$

242. If  $x^2 - px + 4 > 0$  for all real values of  $x$ , then which one of the following is correct?

- (a)  $|p| < 4$       (b)  $|p| \leq 4$   
 (c)  $|p| > 4$       (d)  $|p| \geq 4$

243. If  $z = x + iy = \left(\frac{1}{\sqrt{2}} - \frac{i}{\sqrt{2}}\right)^{-25}$ , where  $i = \sqrt{-1}$ , Then what is the fundamental amplitude of  $\frac{z - \sqrt{2}}{z - i\sqrt{2}}$ ?

- (a)  $\pi$       (b)  $\frac{\pi}{2}$   
 (c)  $\frac{\pi}{3}$       (d)  $\frac{\pi}{4}$

244. What is the number of distinct solutions of the equation  $z^2 + |z| = 0$  (Where  $z$  is a complex number)?

- (a) One      (b) Two  
 (c) Three      (d) Five

245. How many geometric progressions is/are possible containing 27, 8 and 12 as three of its/their terms?/ ,slh fdruh xq.kksYkj Jsfc+;kj laHko gS] ftlds/ ftuds inksa esa ls rhu in 27] 8 vkSj 12 gS\

- (a) One/,d
- (b) Two/nks
- (c) Four/pkj
- (d) Infinitely many/vuarr% vusd

246. A five- digit number divisible by 3 is to be formed using the digits 0, 1, 2, 3 and 4 without repetition of digits. What is the number of ways this can be done?/ 0, 1, 2, 3vkSj 4 vadksa dk iz;ksx vadksa dks nksjgkj, fcuk djrs gq,] 3 ls foHkkT;] ,d ik;p&vadksa okyh la;k cukbZ tkuh gSA ,slk djus ds fdus rjhds gks ldrs gS\

- (a) 96
- (b) 48
- (c) 32
- (d) No number can be formed/dksbZ la;k ugha cu ldrh

247. What is  ${}^{47}C_4 + {}^{51}C_a + \sum_{j=2}^5 52 - j {}^{C_3}$  equal to?/ ${}^{47}C_4 + {}^{51}C_a + \sum_{j=2}^5 52 - j {}^{C_3}$  fdllds cjkcj gSA

- (a)  ${}^{52}C_4$
- (b)  ${}^{51}C_5$
- (c)  ${}^{53}C_4$
- (d)  ${}^{52}C_5$

Consider the following for the next three (03) items that follow:/vxys rhu  $\frac{1}{4}03\frac{1}{2}$  iz"uka"kksa ds fy, fuEufyf[kr ij fopkj dhft,%

Let  $a, x, y, z, b$ , be in AP, where  $x + y + z = 15$ .

Let  $a, p, q, r, b$  be in HP, where

$$p^{-1} + q^{-1} + r^{-1} = 5/3.$$

lekarj Js<+h (AP) esa gS]tgkj

$$x + y + z = 15 \text{ gSA eku yhft, } , p, q, r, b$$

gjkRed Js.kh (HP) esa gS] tgkj

$$p^{-1} + q^{-1} + r^{-1} = 5/3 \text{ gSA}$$

248. What is the value of  $ab$ ?/ab dk eku D;k gS\

- (a) 10

(b) 9

(c) 8

(d) 6

249. What is the value of  $xyz$ ?/  $xyz$ dk eku D;k gS\

(a) 120

(b) 105

(c) 90

(d) Cannot be determined/fu/kkZfjr ugha fd;k tk ldrk

250. What is the value of  $pqr$ ? /  $pqr$ dk eku D;k gS\

(a) 35/243

(b) 81/ 35

(c) 243/35

(d) Cannot be determined//fu/kkZfjr ugha fd;k tk ldrk

Consider the following for the next two (2) items that follows:/vxysa nks  $\frac{1}{4}02\frac{1}{2}$  iz"uka"kksa ds fy, fuEufyf[kr ij fopkj dhft,%

The sixth term of an AP is 2 and its common difference is greater than 1./fdlh lekarj Js<+h (AP) dk NBokj in 2 gS vkSj mldk lkoZ varj 1 ls vf/kd gSA

251. What is the common difference of the AP so that the product of the first, fourth and fifth terms is greatest?/ lekarj Js<+h (AP) dk lkoZ varj fdruk gS] rkfd igys] pkSFks vkSj ikjpoas inksa dk xq.kuQy vf/kdre gks\

(a) 8/5

(b) 9/5

(c) 2

(d) 11/5

252. What is the first term of the AP so that the product of the first, fourth and fifth terms is greatest?/lekarj Js<+h (AP)dk igyk in D;k gS] rkfd igys] pkSFks vkSj ikjposa inksa dk xq.kQy vf/kdre gks\

(a) - 4

(b) - 6

(c) - 8

(d) - 10

253. The sum of all of two-digit odd numbers is/nks & vadh; IHkh fo'k; la;kvksa dk ;ksx fdlld cjkj gS\

(a) 2475

(b) 2530

(c) 4905

(d) 5049

254. The sum of the first  $n$  terms of the series

$\frac{1}{2} + \frac{3}{4} + \frac{7}{8} + \frac{15}{16} + \dots$  is equal to /Js.kh

$\frac{1}{2} + \frac{3}{4} + \frac{7}{8} + \frac{15}{16} + \dots$  ds izFke  $n$  inksa

dk ;ksx fdlld cjkj gS\

(a)  $2^n - n - 1$

(b)  $1 - 2^{-n}$

(c)  $2^{-n} + n - 1$

(d)  $2^n - 1$

255. Consider the following in respect of sets A and B:/leqPp;ksa A o B ds IEcU/k esa fuEufyf[kr ij fopkj dhft,%

1.  $(A - B) \cup B = A$

2.  $(A - B) \cup A = A$

3.  $(A - B) \cap B = \phi$

4.  $A \subseteq B \Rightarrow A \cup B = B$

Which of the above are correct?/mi;qZä esa ls dkSu&ls lgh gS\

(a) 1, 2 and 3/1, 2vkSj 3

(b) 2, 3 and 4/2, 3 vkSj 4

(c) 1, 3 and 4/1, 3vkSj 4

(d) 1, 2 and 4/1, 2 vkSj 4

256. In the binary equation

$(1p101)_2 + (10q1)_2 = (100r00)_2$  where  $p, q$

and  $r$  are binary digits, what are the possible values of  $p, q$  and  $r$  respectively?/,d f}&vk/kkjh

lehdj.k  $(1p101)_2 + (10q1)_2 = (100r00)_2$

tgkj  $p, q$  o  $r$  f}&vk/kkjh vad gS esa  $p, q$  vkSj  $r$  ds laHkkfor eku Øe" k% fdlld cjkj gS\

(a) 0, 1, 0

(b) 1, 1, 0

(c) 0, 0, 1

(d) 1, 0, 1

257. If  $S = \{x: x^2 + 1 = 0, x \text{ is real}\}$ , then S is;/fn

$S = \{x: x^2 + 1 = 0, x \text{ okLrfod gS}\}$ , rks S

fdld cjkj gS\ dk

(a)  $\{-1\}$

(b)  $\{0\}$

(c)  $\{1\}$

(d) An empty set/,d

fjä leqPp;

258. The expansion of  $(x - y)^n, n \geq 5$  is done in the descending powers of  $x$ . If the sum of the fifth and sixth terms is zero, then  $\frac{x}{y}$  is equal to/

$(x - y)^n, n \geq 5$  dk izlkj  $x$  dh ?kkr ds vojksgh Øe esa fd;k  $x$ ;k gSA ;fn ik;posa o NBsa inksa dk ;ksx "kwU; gS] rks  $\frac{x}{y}$  fdlld cjkj gS\

(a)  $\frac{n-5}{6}$

(b)  $\frac{n-4}{5}$

(c)  $\frac{5}{n-4}$

(d)  $\frac{6}{n-5}$

259. If the second term of a GP is 2 and the sum of its infinite terms is 8, then the GP is;/fn ,d xq.kksYkj Js.kh (GP) dk nwlljk in 2 gS vkSj bld vuar inksa dk ;ksxQy 8 gS] rks xq.kksYkj Js.kh (GP) gS

(a)  $8, 2, \frac{1}{2}, \frac{1}{8}, \dots$

(b)  $10, 2, \frac{2}{5}, \frac{2}{25}, \dots$

(c)  $4, 2, 1, \frac{1}{2}, \frac{1}{2^2}, \dots$

(d)

$6, 3, \frac{3}{2}, \frac{3}{4}, \dots$

260. If  $a, b, c$  are in AP or GP or HP, then  $\frac{a-b}{b-c}$  is equal to;/fn  $a, b, c$  lekarj Js.kh ;k xq.kksYkj Js.kh ;k gjkRed Js.kh esa gS] rks  $\frac{a-b}{b-c}$  fdlld cjkj gS\

(a)  $\frac{b}{a}$  or 1 or  $\frac{b}{c}$  / $\frac{b}{a}$  vFkok 1 vFkok  $\frac{b}{c}$

(b)  $\frac{c}{a}$  or  $\frac{c}{b}$  or 1 /  $\frac{c}{a}$  vFkok  $\frac{c}{b}$  vFkok 1

(c)  $1$  or  $\frac{a}{b}$  or  $\frac{a}{c}$  / 1vFkok  $\frac{a}{b}$  vFkok  $\frac{a}{c}$

(d)  $1$  or  $\frac{a}{b}$  or  $\frac{c}{a}$  / 1 vFkok  $\frac{a}{b}$  vFkok  $\frac{c}{a}$

261. What is the sum of all three-digit numbers that can be formed using all the digits 3,4 and 5, when repetition of digits is not allowed? / rhu vadksa dh ,slh IHkh la[;kvksa dk ;ksxQy D;k gS tks IHkh rhu vadksa 3]4 vkSj 5 ls cukbZ tk ldrh gS] tgk; vadksa dh iqujko`fYk Lohdk;Z ughsa gS\

- (a) 2664
- (b) 3882
- (c) 4044
- (d) 4444

262. The ratio of roots of the equations  $ax^2 + bx + c = 0$  and  $px^2 + qx + r = 0$  are equal. If  $D_1$  and  $D_2$  are respective discriminants,

then what is  $\frac{D_1}{D_2}$  equal to? / lehdj.kksa

$ax^2 + bx + c = 0$  vkSj  $px^2 + qx + r = 0$  ds ewyksa dk vuqikr cjkcj gSA ;fn  $D_1$  vkSj  $D_2$  Øe”k% bu

lehdj.kksa ds fofoädj gS] rks  $\frac{D_1}{D_2}$  fdlds cjkcj gS\

- (a)  $\frac{a^2}{p^2}$
- (b)  $\frac{b^2}{q^2}$
- (c)  $\frac{c^2}{r^2}$

(d) None of these above / mi;qZä esa ls dksbZ ugha

Directions : Consider the function  $f(\theta) = 4(\sin^{20} + \cos^{40})$

263. Consider the following statements: / fuEufyf[kr dFkuksa ij fopkj dhft,%

1.  $f(\theta) = 2$  has no solution. / dk dksbZ gy ugha gSA

2.  $f(\theta) = \frac{7}{2}$  has a solution. / dk ,d gy gSA

Which of the above statements is/are correct? / mi;qZä dFkuksa esa ls dksu&lk@ls lgh gS@gS\

- (a) 1 only / dsoy 1
- (b) 2 only / dsoy 2
- (c) both 1 and 2 / 1vkSj 2 nksukas
- (d) Neither 1 nor 2 / u rks 1 vkSj u gh 2

For the next two (2) items that follow: / vkxs vkus okys nks ¼2½ iz”uka”kksa ds fy,%

Dircection (Q. No. 114 and 115)

Consider the curves  $f(x) = x|x| - 1$  and

$g(x) = \begin{cases} \frac{3x}{2}, & x > 0 \\ 2x, & x \leq 0 \end{cases}$

oØksa  $f(x) = x|x| - 1$  vkSj

$g(x) = \begin{cases} \frac{3x}{2}, & x > 0 \\ 2x, & x \leq 0 \end{cases}$  ij fopkj

dhft,A

264. Where do the curves intersect? / ;s oØ dgk; izfrPNsn djrs gS\

- (a) At (2, 3) only / dsoy (2, 3) ij
- (b) At (-1, -2) only / dsoy (-1, -2) ij
- (c) At (2, 3) and (-1, -2) / (2, 3) vkSj (-1, -2) ij
- (d) Neither at (2, 3) nor at (-1, -2) / u rks (2, 3) ij vkSj u gh (-1, -2) ij

265. What is the area bounded by the curves? @ bu oØksa }kjk ifjc) {ks=Qy D;k gS\

- (a)  $\frac{17}{6}$  square units /  $\frac{17}{6}$  oxZ bdkbZ
- (b)  $\frac{8}{3}$  square units /  $\frac{8}{3}$  oxZ bdkbZ
- (c) 2 square units / 2 oxZ bdkbZ
- (d)  $\frac{1}{3}$  square unit /  $\frac{1}{3}$  oxZ bdkbZ

For the next two (2) items that follow: / vkxs vkus okys nks ¼2½ iz”uka”kksa ds fy,%

Consider the function  $f(x) = \frac{27(x^{\frac{2}{3}} - x)}{4}$

Qyu  $f(x) = \frac{27(x^{\frac{2}{3}} - x)}{4}$  ij fopkj dhft,A

266. How many solutions does the function  $f(x) = 1$  have? / Qyu  $f(x) = 1$  ds fdrus gy gS\

- (a) One/ ,d (b) Two/ nks  
(c) Three / rhu (d) Four/ pkj

267. How many solutions does the function  $f(x) = -1$  have? / Qyu function  $f(x) = -1$  ds fdrus gy gS\

- (a) One/ ,d (b) Two/ nks  
(c) Three / rhu (d) Four/ pkj

For the next two (02) items that follow:/ vkxs vkus okys nks  $\frac{1}{4}2\frac{1}{2}$  iz"uka"kkksa ds fy,%

Consider the functions  $f(x) = x g(x)$  and  $g(x) = \left[ \frac{1}{x} \right]$  where  $[\cdot]$  is the greatest integer function/Qyu vkSj ] tgk;  $[\cdot]$  vf/kdre iw.kkZd Qyu gS] ij fopkj dhft,A

268. What is  $\int_{\frac{1}{3}}^{\frac{1}{2}} g(x) dx$  equal to? /  $\int_{\frac{1}{3}}^{\frac{1}{2}} g(x) dx$  fdlds

cjkj gS\

- (a)  $\frac{1}{6}$  (b)  $\frac{1}{3}$   
(c)  $\frac{5}{18}$  (d)  $\frac{5}{36}$

269. What is  $\int_{\frac{1}{3}}^1 f(x) dx$  equal to? /  $\int_{\frac{1}{3}}^1 f(x) dx$  fdlds

cjkj gS\

- (a)  $\frac{37}{72}$  (b)  $\frac{2}{3}$

- (c)  $\frac{17}{72}$  (d)  $\frac{37}{144}$

Consider the function  $f(x) = |x - 1| + x^2$  where  $x \in R$  / Qyu  $f(x) = |x - 1| + x^2$  tgk;  $x \in R$  gS] ij fopkj dhft,A

270. Which one of the following statements is correct? fuEufyf[kr dFkuksa esa ls dkSu&lk ,d lgh gS\

(a)  $f(x)$  is continuous but not differentiable at  $x = 0$  /  $f(x)$ ,  $x = 0$  ij larr gS fdUrq vodyuh; ugha gS

(b)  $f(x)$  is continuous but not differentiable at  $x = 1$  /  $f(x)$ ,  $x = 1$  ij larr gS fdUrq vodyuh; ugha gS

(c)  $f(x)$  is differentiable at  $x = 1$  / ij vodyuh; gS

(d)  $f(x)$  is not differentiable at  $x = 0$  and  $x = 1$  /  $f(x)$ ,  $x = 0$  vkSj  $x = 1$  ij vodyuh; ugha gSa



### ANSWER KEY-

1.	C	31.	D	61.	A	91.	A	121.	A	151.	C	181.	A	211.	B	241.	C
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2.	A	32.	C	62.	C	92.	A	122.	C	152.	B	182.	A	212.	B	242.	B
3.	A	33.	A	63.	A	93.	B	123.	B	153.	D	183.	C	213.	C	243.	A
4.	B	34.	B	64.	C	94.	D	124.	D	154.	B	184.	A	214.	B	244.	C
5.	C	35.	D	65.	A	95.	D	125.	A	155.	D	185.	C	215.	C	245.	D
6.	A	36.	A	66.	D	96.	A	126.	B	156.	A	186.	C	216.	A	246.	D
7.	C	37.	C	67.	A	97.	D	127.	A	157.	C	187.	D	217.	B	247.	A
8.	B	38.	C	68.	A	98.	B	128.	A	158.	C	188.	B	218.	A	248.	B
9.	B	39.	B	69.	C	99.	A	129.	A	159.	B	189.	A	219.	A	249.	B
10.	D	40.	C	70.	B	100.	D	130.	B	160.	B	190.	C	220.	C	250.	C
11.	D	41.	A	71.	B	101.	A	131.	D	161.	D	191.	A	221.	A	251.	A
12.	B	42.	A	72.	B	102.	D	132.	B	162.	D	192.	A	222.	B	252.	B
13.	A	43.	B	73.	B	103.	B	133.	D	163.	D	193.	A	223.	A	253.	A
14.	C	44.	D	74.	A	104.	A	134.	C	164.	B	194.	C	224.	B	254.	C
15.	A	45.	A	75.	B	105.	A	135.	A	165.	C	195.	C	225.	A	255.	B
16.	A	46.	D	76.	B	106.	C	136.	C	166.	D	196.	B	226.	A	256.	A
17.	D	47.	C	77.	C	107.	B	137.	B	167.	A	197.	C	227.	A	257.	D
18.	C	48.	C	78.	A	108.	C	138.	C	168.	C	198.	D	228.	B	258.	B
19.	B	49.	B	79.	C	109.	A	139.	B	169.	D	199.	B	229.	C	259.	C
20.	A	50.	D	80.	A	110.	B	140.	C	170.	A	200.	C	230.	D	260.	C
21.	A	51.	D	81.	C	111.	A	141.	D	171.	A	201.	D	231.	B	261.	A
22.	B	52.	B	82.	A	112.	A	142.	B	172.	D	202.	A	232.	A	262.	B
23.	D	53.	C	83.	D	113.	C	143.	A	173.	C	203.	C	233.	C	263.	C
24.	C	54.	B	84.	A	114.	C	144.	B	174.	C	204.	B	234.	D	264.	C
25.	D	55.	C	85.	B	115.	A	145.	B	175.	B	205.	B	235.	D	265.	B
26.	A	56.	A	86.	D	116.	A	146.	B	176.	D	206.	A	236.	C	266.	B
27.	B	57.	C	87.	B	117.	B	147.	D	177.	C	207.	C	237.	A	267.	A
28.	B	58.	C	88.	A	118.	D	148.	A	178.	B	208.	D	238.	A	268.	B
29.	A	59.	A	89.	A	119.	C	149.	B	179.	B	209.	B	239.	B	269.	A
30.	B	60.	B	90.	B	120.	C	150.	D	180.	B	210.	D	240.	C	270.	B





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# NDA-I 2024

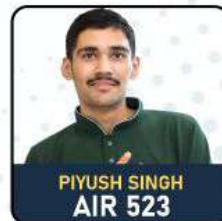
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