

Question Booklet No.

(To be filled up by the candidate by **blue/black ball-point pen**)Roll No.

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Roll No. (Write the digits in words)

Serial No. of OMR Answer Sheet

Day and Date (Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES(Use only **blue/black ball-point pen** in the space above and on both sides of the **Answer Sheet**)

1. Within 10 minutes of the issue of the Question Booklet, Please ensure that you have got the correct booklet and it contains all the pages in correct sequence and no page/question is missing. In case of faulty Question Booklet, bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope*.
3. *A separate Answer Sheet is given. It should not be folded or mutilated. A second Answer Sheet shall not be provided.*
4. Write your Roll Number and Serial Number of the Answer Sheet by pen in the space provided above.
5. *On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.*
6. *No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and Roll No. and OMR sheet No. on the Question Booklet.*
7. *Any changes in the aforesaid-entries is to be verified by the invigilator, otherwise it will be taken as unfair means.*
8. *This Booklet contains 40 multiple choice questions followed by 10 short answer questions. For each MCQ, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, by pen as mentioned in the guidelines given on the first page of the Answer Sheet. For answering any five short Answer Questions use five Blank pages attached at the end of this Question Booklet.*
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed. If you do not wish to attempt a question, leave all the circles in the corresponding row blank (such question will be awarded zero marks).*
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit *both OMR Answer Sheet and Question Booklet* at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

Total No. of Printed Pages : 15

FOR ROUGH WORK

Research Entrance Test – 2013

No. of Questions : 50

Full Marks : 200

Time : 2 Hours

- Note :
- (i) This Question Booklet contains 40 Multiple Choice Questions followed by 10 Short Answer Questions.
 - (ii) Attempt as many MCQs as you can. Each MCQ carries 3 (Three) marks. 1 (One) mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question. If more than one alternative answers of MCQs seem to be approximate to the correct answer, choose the closest one.
 - (iii) Answer only 5 Short Answer Questions. Each question carries 16 (Sixteen) marks and should be answered in 150-200 words. Blank 5 (Five) pages attached with this booklet shall only be used for the purpose. Answer each question on separate page, after writing Question No.

1. Most of the land precipitation and evaporation on earth takes place over the :
 - (1) land masses
 - (2) oceans and seas
 - (3) poles of the planet
 - (4) subtropical latitudes

2. The downstream portion of a river :
 - (1) generally becomes more sluggish
 - (2) usually has turbulent flows
 - (3) generally is of higher velocity, which is marked by reduced turbulence
 - (4) has lower discharges than do upstream portions

3. Which of the following is not a fatty acid ?

(1) Stearic acid	(2) Palmitic acid
(3) Oleic acid	(4) Phenyl acetic acid

4. Which of the following compounds is not an antibiotic ?

(1) Penicillin	(2) Chloramine-T
(3) Streptomycin	(4) Chloramphenicol

5. The acceleration with which a particle moves in a straight line, according to the law $v^2 = 4a(x \sin x + \cos x)$, v being the velocity of the particle at a distance x from a fixed point, is :

(1) 0	(2) $2ax \cos x$
(3) $4ax \cos x$	(4) $2ax \sin x$

6. If $\begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix} A \begin{bmatrix} 0 & 2 \\ 1 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, then the matrix A is :

(1) $\begin{bmatrix} 3 & -4 \\ 3/4 & -1 \end{bmatrix}$

(2) $\begin{bmatrix} -13/4 & 3/2 \\ 5/4 & -1/2 \end{bmatrix}$

(3) $\begin{bmatrix} -17/4 & 3/4 \\ -7/4 & -1/4 \end{bmatrix}$

(4) $\begin{bmatrix} 5/4 & 11/4 \\ 3 & -9/4 \end{bmatrix}$

7. If the error in the measurement of radius of sphere is 0.3%, then the percentage error in the measurement of its volume is :

(1) 0.15%

(2) 0.6%

(3) 0.9%

(4) 0.03%

8. The resistance of series combination of two resistances is S. When they are joined in parallel, the total resistance is P. If $S = nP$, then the minimum possible value of n is :

(1) 3

(2) 4

(3) 2.1

(4) 0.89

9. Mitochondria are associated with the function of :

(1) cellular digestion

(2) circulation

(3) protein synthesis

(4) cellular respiration

10. In which parts of eyes, rods and cones are present ?

(1) Retina

(2) Iris

(3) Cornea

(4) Lens

11. Select a nestler bivalve from the following :
 (1) Pholadomya (2) Oyster (3) Astarte (4) Vca
12. Which of the following belongs to cubichnia ichnofacies :
 (1) Zoophycos (2) Tephrelminthopsis
 (3) Skolithos (4) Asteriacites
13. Which of the following is an articulate brachiopod ?
 (1) Orthis (2) Lingula (3) Obolella (4) Paterina
14. In a normal sequence stratigraphic set up, MFS lies in between :
 (1) TST & HST (2) LST & TST (3) TS & TST (4) LST & TS
15. Which of the following is a benthic foraminifer ?
 (1) Globigerina (2) Globigerinoides (3) Globorotalia (4) Ammonia
16. Lilang Group belongs to :
 (1) Proterozoic of central India (2) Archeans of Singhbhum
 (3) Cambrian of Kashmir (4) Triassic of Spiti.
17. What is Glomeroporphyritic texture ?
 (1) Large crystals set in a fine matrix
 (2) Phenocrysts of the same or different minerals occur in clusters
 (3) There is a continuous gradation in size
 (4) Smaller grains enclosed in a bigger crystal
18. Alkali granite consists of :
 (1) Alkali feldspar, plagioclase feldspar and quartz
 (2) Alkali feldspar and quartz only
 (3) Alkali feldspar, plagioclase feldspar, quartz and alkali mafic minerals
 (4) Plagioclase feldspar and quartz only
19. Volcanic equivalent of ijolite is :
 (1) Nepheline Syenite (2) Phonolite
 (3) Nephelinite (4) Komatiite
20. In the plate tectonic concept the plates are made up of :
 (1) Continental crust only
 (2) Oceanic crust only
 (3) Both continental crust and oceanic crust only
 (4) Continental crust, Oceanic crust and outer part of the Upper Mantle

21. A series of high angled reverse faults developed between two thrust planes is known as :
- (1) Schuppen structure (2) Syntectic pluton
(3) Syntaxial bend (4) None of the above
22. A limited area of older rock surrounded by younger rock on a geological map is called :
- (1) Inlier (2) Outlier (3) Offlap (4) Overlap
23. The principal axes of strain are the directions in which :
- (1) Elongation is maximum (2) Shortening is maximum
(3) Shear strain is maximum (4) Shear strain is zero
24. Heave of a fault is :
- (1) Horizontal displacement between hanging wall and foot wall
(2) Vertical displacement between hanging wall and foot wall
(3) Horizontal displacement between hade and throw
(4) Vertical displacement between hade and throw
25. The largest difference between orogenic metamorphism and contact metamorphism is :
- (1) Lack of significant structural deformation during contact metamorphism
(2) Temperature of contact metamorphism
(3) Absolute pressure of contact metamorphism
(4) Colour of the rocks
26. Prograde metamorphic reactions are :
- (1) Exothermic (2) Endothermic
(3) Diathermic (4) Quasithermic
27. For most P-T-t paths,
- (1) P_{max} and T_{max} occur at the same time.
(2) P_{max} and T_{max} occur at different times.
(3) P_{max} and T_{max} are not significant
(4) For clockwise paths T_{max} occurs before P_{max}

28. Which of the following sets of metamorphic facies is characterized as high-pressure ?
- (1) Albite-epidote hornfels, hornblende hornfels, pyroxene hornfels, and sanidine
 - (2) Blueschist and eclogite
 - (3) Greenschist, amphibolite and granulite
 - (4) None of the above
29. The volatile matter content of coke is :
- (1) Nearly 15 by wt.
 - (2) 5-10% by wt.
 - (3) 2-3% by wt.
 - (4) 2.5-4% by wt.
30. For hydrogenation process :
- (1) Low rank coals are best suited
 - (2) High rank coals are best suited
 - (3) Coal with high inertinite are best suited
 - (4) Coal with high mineral matter are best suited
31. The principal zone of oil formation is called :
- (1) Diagenesis
 - (2) Metagenesis
 - (3) Catagenesis
 - (4) Petrogenesis
32. Buoyant rise of oil and gas in water saturated porous rocks controls the activity of :
- (1) Primary migration
 - (2) Dismigration
 - (3) Secondary migration
 - (4) Entrapment
33. Parts of the tidal flat occurring near the high water line are known as :
- (1) Mixet flat
 - (2) Sand flat
 - (3) Mud flat
 - (4) Carbonate compensation line
34. Hard grounds form during :
- (1) Sea level regression
 - (2) Sea level transgression
 - (3) No change in the sea level
 - (4) Due to erosion
35. Which mineral associations show a good example of greisinzation ?
- (1) Cassiterite- wolframite- tourmaline
 - (2) Cassiterite-magnewtite-chlorite
 - (3) Wolframite-magnetite-sanidine
 - (4) Pyrite-arsenopyrite-chalcopyrite

36. Jaduguda uranium mineralization is controlled by :
 (1) Stratigraphy (2) Shear zone (3) Foliation (4) Cross bedding
37. Pt-Cr-Ni ore mineral deposits are the examples of :
 (1) Hydrothermal deposit (2) Residual deposit
 (3) Magmatic deposit (4) Metamorphic deposit
38. Polarizer direction of a microscope can be determined by crystal of :
 (1) Muscovite (2) Biotite (3) Plagioclase (4) Garnet
39. When the extraordinary ray is faster than the ordinary ray in a mineral, the mineral is ?
 (1) Positive (2) Negative (3) Uniaxial (4) Biaxial
40. To distinguish minerals of the same chemical composition but different crystal structures the technique to be used is :
 (1) Electron probe micro analysis (2) X-ray diffractometry
 (3) Wet chemical analysis (4) Flame photometry

Attempt any five questions. Write answer in 150-200 words. Each question carries 16 marks. Answer each question on separate page, after writing Question Number.

1. What are the various approaches to the palaeoecological investigation ?
2. Which Tools are used for subsurface sequence stratigraphic studies ?
3. Define primary parental magmas ?
4. What is decompression melting ?
5. What is an unconformity ? Give the geological significance of unconformity ?
 What are the criteria for distinguishing a fault and an unconformity ?
6. Define a strain ellipsoid. Describe various types of strain ellipsoid and give their geological significance with respect to structures in deformed rocks.
7. Discuss briefly the Schreinemakers' diagrams ?
8. What is the Role of anorthite content in the formation of migmatites ?
9. Describe estuarine sedimentation.
10. Briefly discuss the Macerals of inertinite group.

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Q. No. :

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